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September 21, 2020

**VIA E-PORTAL FILING**

Adam J. Teitzman, Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, Florida 32399-0850

**Re: Docket No. 20200051-GU – Petition for rate increase by Peoples Gas System  
Docket No. 20200166-GU-Petition for approval of 2020 depreciation study  
by Peoples Gas System**

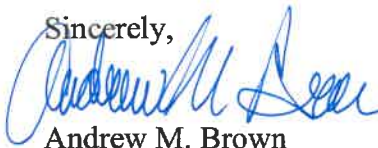
Dear Mr. Teitzman:

Attached for electronic filing in the above docket on behalf of Peoples Gas System,  
please find its Rebuttal Testimony of the following:

1. Luke A. Buzard
2. Dylan D'Ascendis;
3. Sean P. Hillary;
4. Charlene McQuaid;
5. Timothy O'Connor;
6. Valerie Strickland;
7. Richard F. Wall; and
8. Dane Watson.

Your assistance in this matter is greatly appreciated.

Sincerely,

  
Andrew M. Brown

AB/plb

Attachment

cc: J.R. Kelly/Mireille Fall-Fry ([kelly.jr@leg.state.fl.us](mailto:kelly.jr@leg.state.fl.us);[fall-fry.mireille@leg.state.fl.us](mailto:fall-fry.mireille@leg.state.fl.us))  
Kurt Schrader/Jennifer S. Crawford/Bianca Lherisson ([kschrade@psc.state.fl.us](mailto:kschrade@psc.state.fl.us);  
[jcrawfor@psc.state.fl.us](mailto:jcrawfor@psc.state.fl.us); [blheriss@psc.state.fl.us](mailto:blheriss@psc.state.fl.us))  
Jon C. Moyle, Jr., Esq./Karen A. Putnal, Esq. ([jmoyle@moylelaw.com](mailto:jmoyle@moylelaw.com);  
[kputnal@moylelaw.com](mailto:kputnal@moylelaw.com); [mqualls@moylelaw.com](mailto:mqualls@moylelaw.com))

Mr. Adam J. Teitzman  
Commission Clerk  
June 8, 2020  
Page 2

Paula K. Brown  
Kandi Floyd  
Karen Bramley  
Thomas F. Farrior, Esq.



**BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 20200051-GU  
IN RE: PETITION FOR BASE RATE INCREASE BY  
PEOPLES GAS SYSTEM**

**AND**

**DOCKET NO. 20200166-GU  
IN RE: PETITION FOR APPROVAL OF 2020  
DEPRECIATION STUDY BY PEOPLES GAS SYSTEM**

**REBUTTAL TESTIMONY  
OF  
LUKE A. BUZARD**

**FILED: 09/21/2020**

BEFORE THE PUBLIC SERVICE COMMISSION

REBUTTAL TESTIMONY

OF

LUKE A. BUZARD

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

**A.** My name is Luke A. Buzard. My business address is 702 North Franklin Street, Tampa, Florida 33602. I am employed by Peoples Gas System ("Peoples" or the "Company").

**Q.** Are you the same Luke A. Buzard who filed direct testimony in this proceeding?

**A.** Yes, I am.

**Q.** What is the purpose of your rebuttal testimony?

**A.** The purpose of my rebuttal testimony is to address serious errors and shortcomings in the prepared direct testimony of witness Andrea C. Crane, testifying on behalf of the Office of Public Counsel.

1 Q. Have you prepared an exhibit supporting your rebuttal  
2 testimony?

3

4 A. No.

5

6 Q. Please summarize the key concerns and disagreements you  
7 have regarding the substance of witness Andrea C. Crane's  
8 testimony.

9

10 A. My key concerns and disagreements are as follows:

11 1. I disagree with witness Crane's conclusion that the  
12 increase of \$200,000 in incremental pipeline safety  
13 awareness advertising should be disallowed.

14 2. I disagree with witness Crane's conclusion that  
15 \$98,000 in additional A&G employee expenses for  
16 "additional preventive staffing" in the Pipeline  
17 Safety Compliance Department should be disallowed.

18

19 **PIPELINE SAFETY AWARENESS ADVERTISING**

20 Q. Why is the public awareness program important for  
21 Peoples?

22

23 A. Peoples is the largest natural gas company in the state  
24 of Florida and receives over 560,000 locate request  
25 annually, with a historical annual increase of +\- seven

1           percent.       This growth is expected to increase and  
2           parallel the construction growth forecasted for Florida.

3  
4           Pipeline damages caused by excavation associated with  
5           this growth, continues to subject the public, first  
6           responders, Peoples' team members, and the Company's  
7           pipeline facilities to the dangers of a hazardous and  
8           potentially fatal incident. Over 50 percent of Peoples'  
9           pipeline damages are by excavators digging without a  
10          locate request/ticket. Witness Crane ignores these facts  
11          in her testimony, favoring the elimination of funding for  
12          programs designed to prevent these occurrences.

13  
14       **Q.**   How will the increase of \$200,000 to the public awareness  
15          program improve safety for the general public, Peoples'  
16          customers and team members?

17  
18       **A.**   This increase in funding for advertising and awareness  
19          will enhance pipeline damage prevention, awareness,  
20          outreach, and education of the dangers of hitting a  
21          natural gas main across the state.

22  
23          Industry best practices have shown that targeted  
24          awareness campaigns and education materials directed to  
25          industries and associated contractor's increases the

1 awareness to the requirements of calling for a locate  
2 request and safe digging practices and contributes to the  
3 reduction of hazardous pipeline damages.  
4

5 **Q.** Are there further benefits to Peoples increasing spending  
6 in the damage prevention and public awareness campaigns?  
7

8 **A.** Yes. Not only will the increase in the campaign  
9 positively influence safety, the investment in these  
10 campaigns will have a positive impact on customer rates  
11 in the future. Every instance of pipe damage results in  
12 costs to Peoples from pipeline repairs and associated  
13 expenses, legal expenses and potentially other liability  
14 costs. By increasing awareness messaging promoting safe  
15 digging practices and further protecting pipelines, in a  
16 state that only very recently made changes to enforcement  
17 rules surrounding underground damages, Peoples is  
18 improving safety for customers, the general public and  
19 team members.  
20

21 Not only does the prevention of a damage impact Peoples  
22 and its customers, it furthers reliability by preventing  
23 a potential outage to businesses and reduces the need for  
24 other first responders and municipal services to deal  
25 with the damage.

1 **ADDITIONAL PREVENTIVE STAFFING**

2 **Q.** Does witness Crane ignore why damage prevention  
3 activities are important to Peoples?

4  
5 **A.** Yes. Witness Crane does not appear to have any  
6 understanding of why these programs are important to the  
7 Company, to its customers and to the public at large.  
8 Based on industry data, Peoples arguably experiences the  
9 most damages per miles of mains and services of any other  
10 gas utility of similar size in customer base. These  
11 conditions are due to the significant amount of  
12 residential and commercial growth in Florida and the  
13 corresponding roadway construction, which in conjunction  
14 with lacking enforcement actions, results in significant  
15 underground pipeline damages compared to other areas of  
16 the country.

17  
18 Peoples' Damage Prevention team is dedicated to work with  
19 contractors to ensure the process of locating and  
20 protecting underground facilities prevents damage to an  
21 underground pipeline from ever occurring.

22  
23 Florida has one of the highest volumes of locate ticket  
24 requests in the country and it is critical that Peoples  
25 continues to improve programs to enhance safety and



1 reliability for its customers. Peoples' experiences over  
2 1,300 damages per year and although Peoples works  
3 diligently to drive to a lower damages per 1,000 ticket  
4 requests it requires the continued pursuit of improvement  
5 to our systems and programs to reduce damages.

6  
7 **Q.** Contrary to witness Crane's conclusion, why does Peoples  
8 need additional staffing in damage prevention?

9  
10 **A.** Peoples serves essentially all the major metropolitan  
11 areas across Florida. Due to that geographic challenge  
12 and given the Company's high damage rate, the Company is  
13 pursuing additional staffing to have more onsite presence  
14 at active state and municipal expansion of roadway and  
15 water/sewer construction projects to proactively  
16 coordinate with contractors and protect a potential  
17 damage to a gas line. Industry best practice of onsite  
18 presence at active construction sites to collaborate with  
19 contractors has proven to significantly contribute to  
20 lowering the occurrence of a damage.

21  
22 Peoples is also adding staffing to continue to enhance  
23 quality control and quality assurance over locating  
24 activities. The accuracy and reliability of these  
25 processes are critical to assist with preventing

1 excavation damages to pipelines.

2

3 **Q.** What is the need for the additional A&G of \$98,000  
4 employee expenses for additional preventive staffing in  
5 the 2021 test year?

6

7 **A.** As Peoples expands the staffing of the damage prevention  
8 and quality assurance teams, it is necessary to expand  
9 the employee expenses to support their annual activities.  
10 These damage prevention coordinators and quality  
11 assurance associates incur employee expenses related to  
12 tools and equipment, uniforms, training, travel and other  
13 incidental expenses. The increase of \$98,000 to A&G is  
14 to adequately provide for the expansive territory being  
15 served by critical resources that are dedicated to  
16 reducing the occurrence of underground excavation damages  
17 to natural gas pipelines in our service area.

18

19 **SUMMARY**

20 **Q.** Please summarize your rebuttal testimony.

21

22 **A.** The increase of \$200,000 to Peoples' Public Awareness  
23 campaign is reasonable and necessary due to the  
24 conditions that persist in the state of Florida  
25 surrounding underground excavation damage to gas lines.

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Due to over 50 percent of damages being driven by excavators not calling prior to digging, Peoples has an obligation to further advance these efforts in the interest of protecting the safety of the general public, team members and customers.

The increase to A&G expenses of \$98,000 associated with employee expenses for preventive safety staffing is justified due to the expansion of resources to further protect underground gas pipelines. Witness Crane's recommendation to eliminate these expenses ignores their necessity to ensure compliance and safe operations.

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

**A.** Yes, it does.

BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20200051-GU  
IN RE: PETITION FOR BASE RATE INCREASE BY  
PEOPLES GAS SYSTEM

AND

DOCKET NO. 20200166-GU  
IN RE: PETITION FOR APPROVAL OF 2020  
DEPRECIATION STUDY BY PEOPLES GAS SYSTEM

REBUTTAL TESTIMONY AND EXHIBIT  
OF  
DYLAN W. D'ASCENDIS, CRAA, CVA  
ON BEHALF OF PEOPLES GAS SYSTEM

FILED: 09/21/2020

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BEFORE THE PUBLIC SERVICE COMMISSION

REBUTTAL TESTIMONY

OF

DYLAN W. D'ASCENDIS

ON BEHALF OF PEOPLES GAS SYSTEM

I. INTRODUCTION

Q. Please state your name, business address, occupation and employer.

A. My name is Dylan W. D'Ascendis. My business address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054. I am a Director at ScottMadden, Inc. (ScottMadden).

Q. On whose behalf are you submitting this testimony?

A. I am submitting this rebuttal testimony before the Florida Public Service Commission ("Commission") on behalf of Peoples Gas System ("Peoples" or the "Company").

Q. Did you submit direct testimony in this proceeding?

A. No, I did not.

Q. Do you intend to adopt the direct testimony sponsored by

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Robert B. Hevert in this proceeding?

**A.** Yes, I am adopting and incorporating as my own the direct testimony and Exhibit, as well as all responses to discovery requests, sponsored by Robert B. Hevert in this proceeding. In adopting witness Hevert's direct testimony, I refer to his direct testimony as my own in my rebuttal testimony. Mr. Hevert is no longer employed at ScottMadden, taking a position at Unitil Corporation as the Senior Vice President effective July 23, 2020, and subsequently elected Chief Financial Officer and Treasurer, effective July 31, 2020.

**Q.** Please describe your educational and professional background.

**A.** I have offered expert testimony on behalf of investor-owned utilities in over 20 state regulatory commissions in the United States, one Canadian province, and one American Arbitration Association panel on issues including, but not limited to, common equity cost rate, rate of return, valuation, capital structure, relative investment risk, class cost of service, and rate design.

On behalf of the American Gas Association ("AGA"), I calculate the AGA Gas Index, which serves as the benchmark

1 against which the performance of the American Gas Index  
2 Fund ("AGIF") is measured on a monthly basis. The AGA Gas  
3 Index and AGIF are a market capitalization weighted index  
4 and mutual fund, respectively, consisting of the common  
5 stocks of the publicly traded corporate members of the AGA.

6  
7 I am a member of the Society of Utility and Regulatory  
8 Financial Analysts ("SURFA"). In 2011, I was awarded the  
9 professional designation "Certified Rate of Return Analyst"  
10 by SURFA, which is based on education, experience, and the  
11 successful completion of a comprehensive written  
12 examination.

13  
14 I am also a member of the National Association of Certified  
15 Valuation Analysts and was awarded the professional  
16 designation "Certified Valuation Analyst" in 2015.

17  
18 I am a graduate of the University of Pennsylvania, where I  
19 received a Bachelor of Arts degree in Economic History. I  
20 have also received a Master of Business Administration with  
21 high honors and concentrations in Finance and International  
22 Business from Rutgers University.

23  
24 The details of my educational background and expert witness  
25 appearances are shown in Attachment A to my rebuttal

1 testimony.

2  
3 **II. PURPOSE AND OVERVIEW OF TESTIMONY**

4 **Q.** What is the purpose of your rebuttal testimony in this  
5 proceeding?

6  
7 **A.** The purpose of my rebuttal testimony is two-fold. First,  
8 I update my analytical results. Second, I respond to and  
9 address serious shortcomings in the prepared direct  
10 testimony of witness David J. Garrett, testifying on behalf  
11 of the Florida Office of Public Counsel ("OPC"), regarding  
12 the Company's Cost of Common Equity ("ROE").

13  
14 **Q.** Please summarize your conclusions.

15  
16 **A.** As discussed in Section III below, due to the fluid market  
17 conditions as a result of the COVID-19 pandemic, I have  
18 updated my ROE analyses as of August 31, 2020. Based on my  
19 updated analyses, I reaffirm the range of reasonable ROEs  
20 attributable to Peoples is between 10.00 percent to 11.00  
21 percent and maintain my specific recommendation of 10.75  
22 percent as an appropriate measure of ROE applicable to  
23 Peoples at this time. In view of current markets and the  
24 results of my ROE models, ROEs of 6.50 percent and 7.30



1 percent,<sup>1</sup> proffered by witness Garrett, are woefully  
2 inadequate.

3  
4 **Q.** Please summarize your interpretation of current capital  
5 markets.

6  
7 **A.** As explained in my direct testimony<sup>2</sup> and discussed in  
8 Section IV below, the turmoil in capital markets  
9 attributable to the COVID-19 pandemic has increased risk  
10 for the entire economy, generally, and utilities,  
11 specifically. Key takeaways include:

- 12 • The full impact and duration of the COVID-19 pandemic  
13 are unknown, and outcomes are still highly uncertain;
- 14 • This uncertainty increases capital market volatility;  
15 and volatility increases the risk of investment  
16 losses. As a result, investors tend to flee to bonds  
17 to limit their investment losses, which is known as a  
18 "flight to safety". Increased levels of bond  
19 purchases increase their price and drive down their  
20 yields, *i.e.*, interest rates. Because of this, the  
21 current low-interest rate environment is due to  
22 increased volatility in the market, and not a steady  
23 lowering of the cost of debt over time; and

---

<sup>1</sup> The ROE estimates of 6.50 percent and 7.30 percent reflect the results of witness Garrett's CAPM and Quarterly DCF models, respectively.

<sup>2</sup> Prepared Direct Testimony and Exhibit of Robert B. Hevert, at 14-34.

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- The same increased market volatility that caused investors' "flight to safety" also created a situation where utilities traded in tandem with market indices. The correlated returns of utility stocks and market indices, in combination with increased volatility, increases Beta coefficients (a measure of risk), and by extension, investor-required returns.

**Q.** Please summarize your response to OPC's witness Garrett.

**A.** In my response to witness Garrett's estimate of the Company's ROE (see, Section V below), I explain the shortcomings of witness Garrett's analyses and conclusions, including, but not limited to:

- How far disconnected his recommended ROE is from his own analytical results and observable and relevant data;
- His misinterpretation of the relationships between various returns;
- His misunderstanding of the nature of utility regulation;
- His misapplication of the Discounted Cash Flow ("DCF") model;
- His misapplication of the Capital Asset Pricing Model ("CAPM"); and

- 1           •     His refusal to consider flotation costs and other  
2                    Company-specific factors in his ROE recommendation.  
3

4           In addition, I also respond to witness Garrett's unfounded  
5           critiques of my direct testimony.  
6

7   **Q.**    Have you prepared an exhibit supporting your rebuttal  
8           testimony?  
9

10 **A.**    Yes, I have. My analyses and conclusions are supported by  
11           the data presented in Document Nos. 1 through 20 of Exhibit  
12           No. \_\_ (DWD-1), which have been prepared by me or under my  
13           direction and supervision.  
14

15 **III. UPDATED ROE ANALYSIS**

16 **Q.**    Have you revisited your analyses to reflect current market  
17           conditions?  
18

19 **A.**    Yes, I have. As stated above, as a result of the fluid  
20           nature of current market conditions since my direct  
21           testimony, I re-ran my ROE analyses as of August 31, 2020.  
22           The results are summarized in Document No. 1, and the  
23           analyses are contained in Document Nos. 2 through 8 of my  
24           Exhibit.  
25

1 Q. Have you applied the ROE models in the same manner and to  
2 the same proxy group as you applied them in your direct  
3 testimony?

4  
5 A. Yes, I have. The range of results<sup>3</sup> produced by my four  
6 approaches using more recent data are as follows:

- 7 • The Constant Growth DCF method median results indicate  
8 an ROE in the range of approximately 7.27 percent to  
9 11.41 percent (please refer to Document No. 2);
- 10 • The CAPM model suggests an ROE in the range of  
11 approximately 12.00 percent to 14.93 percent; and the  
12 Empirical CAPM ("ECAPM") model indicates an ROE in the  
13 range of approximately 12.45 percent to 15.18 percent  
14 (please refer to Document No. 6);
- 15 • The Bond Yield Plus Risk Premium approach suggests an  
16 ROE in the range of 9.90 percent to 10.38 percent (see,  
17 Document No. 7); and
- 18 • The Expected Earnings approach indicates an ROE in the  
19 range of approximately 9.14 percent to 9.29 percent  
20 (see, Document No. 8).

21  
22 **IV. CAPITAL MARKET CONDITIONS**

23 Q. Have capital market conditions changed significantly since

---

<sup>3</sup> My estimate of the indicated range is narrower than the overall range of model results.

1           you filed your direct testimony?

2

3       **A.**   No, they have not.  Since the filing of my direct testimony,  
4           capital markets have continued to be characterized by high  
5           levels of volatility and market instability, and utility  
6           returns have continued to be highly correlated with the  
7           overall market.

8

9       **Q.**   Please briefly summarize witness Garrett's observations of  
10          utility stocks in relation to the capital market and the  
11          conclusions he reached.

12

13       **A.**   While witness Garrett provides no discussion of the capital  
14          market environment, in general, and the effects of the  
15          recent capital market dislocation on the utility sector, in  
16          particular, he argues that the Company's "true" Cost of  
17          Equity is low because "utilities are defensive firms that  
18          experience little market risk and are relatively insulated  
19          from market conditions."<sup>4</sup>

20

21       **Q.**   Do you agree with witness Garrett's statements that  
22          utilities are "low risk" investments and "relatively  
23          insulated from market conditions" in the current capital  
24          market?

---

<sup>4</sup> Direct Testimony of David J. Garrett, at 40.

1     **A.**   No, I do not.   While witness Garrett considers utility  
2           stocks as "low-risk" investments, in this period of extreme  
3           market volatility, they are not.

4  
5     **Q.**   Have you conducted an analysis to determine whether natural  
6           gas distribution utility stocks are "low-risk" investments  
7           in the current market?

8  
9     **A.**   Yes, I have.   Specifically, I analyzed the relative  
10          performance and annualized volatilities<sup>5</sup> of my proxy group,  
11          the Dow Jones Utility Average ("DJU"), the Utilities Select  
12          SPDR ("XLU"), the Dow Jones Industrial Average ("DJI"), and  
13          the S&P 500 to gauge whether utilities weathered the COVID-  
14          19 pandemic better than the overall market.  As shown in  
15          Document No. 9 of my exhibit, from January 31, 2020<sup>6</sup> to  
16          August 31, 2020, utilities were generally more volatile  
17          (*i.e.*, risky) than the market indices, and had returns that  
18          underperformed the DJI and the S&P 500.

19  
20                 In addition to the analysis in Document No. 9, I also  
21                 calculated the correlation coefficients of the price

---

<sup>5</sup>         The annualized volatility of a stock is measured by taking the standard deviation of the price changes within the sample and multiplying by the square root of 252 (the assumed number of trading days in a year).

<sup>6</sup>         I chose January 31, 2020 because on June 8, 2020, the National Bureau of Economic Research determined that a peak in monthly economic activity occurred in the U.S. economy in February 2020. The peak marks the end of the expansion that began in June 2009 and the beginning of a recession. <https://www.nber.org/cycles/june2020.html>.

1 changes of the utility groups relative to the S&P 500 and  
2 the DJI from February 1, 2020 to August 31, 2020.  
3 Specifically, in Document No. 10 of my exhibit, I calculated  
4 correlation coefficients for the following relationships:

- 5 • The price changes of the S&P 500 relative to the price  
6 changes of my proxy group;
- 7 • The price changes of the S&P 500 relative to the price  
8 changes of the DJU;
- 9 • The price changes of the S&P 500 relative to the price  
10 changes of the XLU;
- 11 • The price changes of the DJIA relative to the price  
12 changes of my proxy group;
- 13 • The price changes of the DJIA relative to the price  
14 changes of the DJU; and
- 15 • The price changes of the DJIA relative to the price  
16 changes of the XLU.

17  
18 As shown in Document No. 10 of my Exhibit, the correlations  
19 between utility stocks and the market indices are similar  
20 indicating that utility stocks have been trading in tandem  
21 with market indices during the current market dislocation,  
22 which is consistent with the risk and return data shown in  
23 Document No. 9 of my exhibit. The behavior of utility  
24 stocks to move in tandem with the market during market  
25 distress is not limited to the current period. During the

1 Great Recession (December 2007 to June 2009), correlations  
2 between these same groups were also similar, as also shown  
3 in Document No. 11 of my exhibit.

4  
5 Thus, in view of the above, witness Garrett's statements  
6 regarding the "low-risk" nature of utility stocks should be  
7 dismissed, especially in this volatile capital market.

8  
9 **Q.** Witness Garrett claims that "awarded ROEs have  
10 appropriately been decreasing in accordance with declining  
11 capital costs."<sup>7</sup> Is he correct?

12  
13 **A.** No, he is not. As stated in my direct testimony<sup>8</sup> and  
14 demonstrated in Exhibit No. \_\_ (RBH-1), Document No. 16,  
15 awarded ROEs have not followed the decline in interest  
16 rates, but remained relatively consistent since 2015.  
17 Thus, witness Garrett's claim should be dismissed.

18  
19 **Q.** What conclusions did you draw from your review of the  
20 current capital market and its implications on the  
21 Company's Cost of Equity?

22  
23 **A.** In view of the above and my direct testimony, current

---

<sup>7</sup> Direct Testimony of David J. Garrett, at 7.

<sup>8</sup> Prepared Direct Testimony and Exhibit of Robert B. Hevert, at 24.



1 capital markets are indicating higher investor-required  
2 returns for utility companies due to the COVID-19 pandemic.  
3 Because of this, witness Garrett's "true" Cost of Equity of  
4 6.90 percent and his recommended ROE of 9.50 percent are  
5 woefully inadequate, and my recommended range of ROEs  
6 between 10.00 percent and 11.00 percent is reasonable.  
7 Within that range, my recommended point estimate of 10.75  
8 percent for the Company is appropriate, if not  
9 conservative.

10  
11 **V. RESPONSE TO OPC WITNESS GARRETT**

12 **Q.** Please provide a brief summary of witness Garrett's  
13 analyses and recommendations regarding the Company's Cost  
14 of Equity.

15  
16 **A.** Although witness Garrett believes the Company's "true" Cost  
17 of Equity is 6.90 percent, he recommends an ROE of 9.50  
18 percent.<sup>9</sup> Witness Garrett estimates the Cost of Equity  
19 using the Quarterly DCF model (7.30 percent) and the CAPM  
20 (6.50 percent).<sup>10</sup>

21  
22 **Q.** Are witness Garrett's analytical results and recommendation  
23 reasonable measures of the Company's Cost of Equity?

---

<sup>9</sup> Direct Testimony of David J. Garrett, at 13; and Exhibit DJG-12. Witness Garrett specifically argues the models he applies estimate the "true cost of equity"; the average of his model results is 6.90 percent.

<sup>10</sup> Exhibits DJG-6 and DJG-11, respectively.

1     **A.**   No, they are not.   Witness Garrett's recommended ROE of  
2           9.50 percent is fundamentally disconnected from his own  
3           analyses and conclusions; and his analytical model results  
4           of 7.30 percent and lower are far removed from observable  
5           and relevant data, including the 2019 average authorized  
6           ROEs provided in his testimony of 9.64 percent and 9.67  
7           percent for electric and gas utilities, respectively.<sup>11</sup>  
8           Throughout his testimony, witness Garrett believes his  
9           analytical results indicate that the "true" Cost of Equity  
10          for the Company is 6.90 percent.  He views the decisions of  
11          utility commissions to have been significantly and  
12          consistently wrong, but suggests moving all the way to the  
13          "true" Cost of Equity would be "a significant, sudden change  
14          in the awarded ROE anticipated by regulatory stakeholders"  
15          that "could have the undesirable effect of notably  
16          increasing the Company's risk profile and would arguably be  
17          at odds with the *Hope* Court's 'end result' doctrine."<sup>12</sup>  On  
18          those points, we agree.  However, while I appreciate the  
19          need for judgment in developing ROE recommendations, I  
20          believe there should be some empirical basis for them.  
21          Since witness Garrett's 9.50 percent recommendation is so  
22          far removed from his analytical model results, we cannot  
23          assess the basis of his ultimate recommendation, empirical

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<sup>11</sup>       Exhibit DJG-14.

<sup>12</sup>       Direct Testimony of David J. Garrett, at 14.

1 or otherwise. To justify his recommendation for an ROE  
2 which has no connection to his analytical results, witness  
3 Garrett argues that the Commission should apply the  
4 ratemaking concept of "gradualism" to move the Company's  
5 ROE to his "true" Cost of Equity.<sup>13</sup>  
6

7 **Q.** Do you agree with witness Garrett's recommendation to the  
8 Commission regarding the use of "gradualism" in determining  
9 the appropriate ROE for the Company?  
10

11 **A.** No, I do not. The role of ROE witnesses is to testify  
12 regarding the return required by equity investors, *i.e.*,  
13 the Cost of Equity, as will be discussed in detail below.  
14 It is the Commission's difficult task in fixing just and  
15 reasonable rates to balance that cost with all other  
16 elements of the revenue requirement. As witness Garrett  
17 himself stated, "gradualism" is "usually applied from the  
18 customer's standpoint to minimize rate shock,"<sup>14</sup> and  
19 therefore would not be applicable to the ROE  
20 recommendation. In view of the above, witness Garrett's  
21 recommendation is without merit and should be given no  
22 weight by the Commission.  
23

---

<sup>13</sup> *Ibid.*

<sup>14</sup> *Ibid.*

1 Q. In what key areas are witness Garrett's analyses and  
2 recommendations incorrect or unsupported?

3

4 A. In addition to recommending a specific ROE with seemingly  
5 no empirical basis, there are several areas in which witness  
6 Garrett's analyses and conclusions are incorrect or  
7 unsupported, including: (1) his incorrect assessment of the  
8 relationships between returns and their applicability to  
9 the Company's ROE; (2) his incorrect observation that  
10 authorized ROEs have exceeded the investor-required return  
11 on the market for 30 years; (3) his misapplication of the  
12 DCF model; (4) his misapplication of the CAPM; and (5) his  
13 refusal to consider flotation costs and other Company-  
14 specific risk factors in his ROE recommendation. Those  
15 points are discussed in turn, below.

16

17 **1. Incorrect Assessment of Relationships Between Various**  
18 **Returns and Applicability to the Company's ROE**

19 Q. Please summarize witness Garrett's views on the  
20 relationship between the Cost of Equity, the investor-  
21 required ROE, earned ROE, and awarded ROE for regulated  
22 utilities.

23

24 A. Witness Garrett believes the above specified returns are

1 all interrelated, but technically different.<sup>15</sup> He  
2 summarizes his view on the relationship between the returns  
3 on page 4 of his testimony in the following sentence: "If  
4 the awarded ROE reflects a utility's cost of equity, then  
5 it should allow the utility to achieve an earned ROE that  
6 is sufficient to satisfy the required return of its  
7 investors."<sup>16</sup> Witness Garrett also discusses another type  
8 of return, the "expected" return, which in his words, "has  
9 nothing to do with what the investor 'expects' the ROE  
10 awarded by a regulatory commission to be."<sup>17</sup>

11  
12 **Q.** Does witness Garrett's views regarding the relationship  
13 between allowed and investor-required ROEs for utilities  
14 change throughout the course of his testimony?

15  
16 **A.** Yes. On page 11 of his testimony, witness Garrett  
17 contradicts his earlier assertion, stating that awarded  
18 ROEs and Cost of Equity (*i.e.*, investor-required returns)  
19 are very different concepts because of the regulatory  
20 process being carried out by elected and appointed  
21 officials.<sup>18</sup>

22  
23 However, on page 23 of his testimony, witness Garrett again

---

<sup>15</sup> *Ibid.*, at 3.

<sup>16</sup> *Ibid.*, at 4.

<sup>17</sup> *Ibid.*

<sup>18</sup> *Ibid.*, at 11.

1 changes track, stating:

2  
3 The *Hope* Court makes it clear that the allowed  
4 return should be based on the actual cost of  
5 capital. Under the rate base rate of return  
6 model, a utility should be allowed to recover all  
7 its reasonable expenses, its capital investments  
8 through depreciation, and a return on its capital  
9 investments sufficient to satisfy the required  
10 return of its investors. The "required return"  
11 from the investors' perspective is synonymous  
12 with the "cost of capital" from the utility's  
13 perspective. Scholars agree that the allowed rate  
14 of return should be based on the actual cost of  
15 capital:

16 Since by definition the cost of capital  
17 of a regulated firm represents  
18 precisely the expected return that  
19 investors could anticipate from other  
20 investments while bearing no more or  
21 less risk, and since investors will not  
22 provide capital unless the investment  
23 is expected to yield its opportunity  
24 cost of capital, the correspondence of  
25 the definition of the cost of capital

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with the court's definition of legally  
required earnings appears clear.<sup>19,20</sup>

Witness Garrett continues to change his position regarding the equivalency, or non-equivalency, of the allowed and required ROE, sometimes in consecutive sentences. For example, on page 24 of his testimony, witness Garrett states that "The two concepts [allowed and required ROEs] are related in that the legal and technical standards encompassing this issue require that the awarded return reflect the true cost of capital. On the other hand, the two concepts are different in that the legal standard do not mandate that awarded returns exactly match the cost of capital."<sup>21</sup>

- Q.** What is your reaction to witness Garrett's views on the relationship between allowed and required ROEs for utility companies?
- A.** Witness Garrett is unnecessarily complicating a simple relationship. For regulated utilities, the ROE equals the investor-required ROE which equals the allowed ROE, as

---

<sup>19</sup> A. Lawrence Kolbe, George A. Read, Jr, George Hall, *The Cost of Capital: Estimating the Rate of Return for Public Utilities*, The MIT Press, 1984, at 21.

<sup>20</sup> Direct Testimony of David J. Garrett, at 23.

<sup>21</sup> *Ibid.*, at 24. Clarification and emphasis added.

1 reflected in the *Hope* and *Bluefield* Supreme Court decisions  
2 cited in both my direct testimony<sup>22</sup> and witness Garrett's  
3 testimony.<sup>23</sup> This relationship holds because utility  
4 regulation by regulatory commissions acts as a substitute  
5 for competition.

6  
7 **Q.** Is the concept of utility regulation as a substitute for  
8 market competition widely accepted as a fact and reflected  
9 as such in academic literature?

10  
11 **A.** Yes, it is. The *Cost of Capital Manual*, which is the  
12 training manual for SURFA, of which witness Garrett and I  
13 are members, states:

14 In a sense, the "visible hand of public  
15 regulation was (created) to replace the invisible  
16 hand of Adam Smith in order to protect consumers  
17 against exorbitant charges, restriction of  
18 output, deterioration of service, and unfair  
19 discrimination." [footnote omitted]

20 \*\*\*

21 As indicated above, regulation of public  
22 utilities reflects a belief that the competitive  
23 mechanism alone cannot be relied upon to protect

---

<sup>22</sup> Prepared Direct Testimony and Exhibit of Robert B. Hevert, at 28-31.  
<sup>23</sup> Direct Testimony of David J. Garrett, at 23.



1 the public interest. Essentially, it is  
2 theorized that a truly competitive market  
3 involving utilities cannot survive and, thereby,  
4 will fail to promote the general economic  
5 welfare. But this does not mean that regulation  
6 should alter the norm of competitive behavior for  
7 utilities. On the contrary, the primary  
8 objective of regulation is to produce market  
9 results (*i.e.*, price and quantity supplied) in  
10 the utility sectors of the economy closely  
11 approximating those conditions which would be  
12 obtained if utility rates and services were  
13 determined competitively.<sup>24</sup>

14  
15 Additionally, in *Principles of Public Utility Rates*, Dr.  
16 Bonbright states:

17 Lest the reader of this chapter gain the  
18 impression that it is intended to deny the  
19 relevance of any tests of reasonable rates  
20 derived from the theory or the behavior of  
21 competitive prices, let me state my conviction  
22 that no such conclusion would be warranted. On  
23 the contrary, a study of price behavior both

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<sup>24</sup> David C. Parcell, *Cost of Capital Manual*, Society of Utility and  
Regulatory Financial Analysts, 2010 Edition, at 3-4.

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under assumed conditions of pure competition and under actual conditions of mixed competition is essential to the development of sound principles of utility rate control. Not only that: any good program of public utility rate making must go a certain distance in accepting competitive-price principles as guides to monopoly pricing. For rate regulation must necessarily try to accomplish the major objectives that unregulated competition is designed to accomplish, and the similarity of purpose calls for a considerable degree of similarity of price behavior.

Regulation, then, as I conceive it, is indeed a substitute for competition; and it is even a partly imitative substitute. But so is a Diesel locomotive a partly imitative substitute for a steam locomotive, and so is a telephone message a partly imitative substitute for a telegraph message. What I am trying to emphasize by these crude analogies is that the very nature of a monopolistic public utility is such as to preclude an attempt to make the emulation of competition very close. The fact, for example, that theories of pure competition leave no room

1 for rate discrimination, while suggesting a  
2 reason for viewing the practice with skepticism,  
3 does not prove that discrimination should be  
4 outlawed. And a similar statement would apply  
5 alike to the use of an original-cost or a fair  
6 value rate base, neither of which is defensible  
7 under the theory or practice of competitive  
8 pricing.<sup>25</sup>

9  
10 Finally, Dr. Phillips states in *The Regulation of Public*  
11 *Utilities*:

12 Public utilities are no longer, if they were ever  
13 were, isolated from the rest of the economy. It  
14 is possible that the expanding utility sector has  
15 been taking too large a share of the nation's  
16 resources, especially of investment. [footnote omitted]  
17 At a minimum, regulation must be viewed in the  
18 context of the entire economy - and evaluated in  
19 a similar context. Public utilities have always  
20 operated within the framework of a competitive  
21 system. They must obtain capital, labor and  
22 materials in competition with unregulated  
23 industries. Adequate profits are not guaranteed

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<sup>25</sup> James C. Bonbright, *Principles of Public Utility Rates*, Columbia University Press, 1961, at 106-107.

1 to them. Regulation then, should provide  
2 incentives to adopt new methods, improve quality,  
3 increase efficiency, cut costs, develop new  
4 markets and expand output in line with customer  
5 demand. In short, regulation is a substitute for  
6 competition and should attempt to put the utility  
7 sector under the same restraints competition  
8 places on the industrial sector.<sup>26</sup>

9  
10 In view of the legal standard cited by me and witness  
11 Garrett, and treatises on regulation likening regulation of  
12 utilities and the competitive market, it is plain to see  
13 that allowed returns and investor-required returns are also  
14 equal.

15  
16 **Q.** What is the relationship between the earned ROE and the  
17 required/allowed ROE for utility companies?

18  
19 **A.** The earned ROE is the return realized by the utility. The  
20 regulatory commission allows the utility an opportunity to  
21 earn its required return, but what the utility earns is  
22 generally subject to several factors, which may include  
23 regulatory lag and management efficiency.

---

<sup>26</sup> Charles F. Phillips, *The Regulation of Public Utilities*, Public Utility Reports, Inc., 1993, at 173.

1 Q. What is the relationship between expected returns and  
2 required/allowed ROE?

3

4 A. In this instance, I agree with witness Garrett that the  
5 expected return has nothing to do with what the investor  
6 expects the required/allowed return should be. Expected  
7 returns from investment houses or pension funds are  
8 expectations of what earned returns will be, not what  
9 investors require, which means that expected returns have  
10 no bearing on ROE determinations.

11

12 2. Incorrect Observations that Allowed ROEs for Utilities  
13 Exceed the Investor-Required Return on the Market

14 Q. Please summarize witness Garrett's claim that allowed  
15 returns for utility companies exceed the required return on  
16 the market.

17

18 A. Witness Garrett estimates the investor-required return on  
19 the market by adding the annual average 10-year Treasury  
20 bond yield to a market risk premium (MRP) calculated by the  
21 New York University School of Business for the period 1990-  
22 2019. He then compares that return to the average annual  
23 authorized returns for electric and gas utilities over that

1 same period<sup>27</sup> to support his argument that "awarded ROEs  
2 have been consistently above the market cost of equity for  
3 many years."<sup>28</sup> Witness Garrett further argues that the  
4 excess returns awarded to utilities result in a transfer of  
5 wealth from customers to shareholders.<sup>29</sup>

6  
7 Witness Garrett also refers to an article published in  
8 *Public Utilities Fortnightly*,<sup>30</sup> suggesting that utility  
9 stocks have outperformed the broader market and will  
10 continue to do so in the future.

11  
12 **Q.** What is your response to witness Garrett's observations,  
13 and the conclusions he draws from them?

14  
15 **A.** Witness Garrett's observations and resulting conclusions  
16 are misplaced. As a preliminary matter, witness Garrett's  
17 conclusion that allowed returns for utility companies  
18 exceed the required return on the market is his opinion and  
19 driven by the inputs he has chosen to estimate the required  
20 return on the market. As discussed below, applying more  
21 reasonable models and inputs demonstrate allowed ROEs  
22 average about 70.00 percent of the required return on the

---

<sup>27</sup> See, for example, Direct Testimony of David J. Garrett, Figure 4; and Exhibit DJG-14.

<sup>28</sup> Direct Testimony of David J. Garrett, at 27.

<sup>29</sup> *Ibid.*, at 77.

<sup>30</sup> *Ibid.*, at 28.

1 market, consistent with utility betas over the period from  
2 1990-2019.

3  
4 Regarding the *Public Utilities Fortnightly* article, it was  
5 published in August 2016, shortly after the 30-year  
6 Treasury yield fell to its prior cyclical low of 2.11  
7 percent on July 8, 2016. Between July and December 2016,  
8 the utility sector, as represented by witness Garrett's  
9 proxy group, lost 2.77 percent of its value as the broader  
10 market (measured by the S&P 500) increased by 6.71 percent.  
11 That is, despite the article's conviction that utilities  
12 would continue to outperform the market, shortly after its  
13 publication utility stocks meaningfully underperformed the  
14 broad market. From August 2016 through August 2020, the  
15 utility sector (measured by the XLU, and the Dow Jones  
16 Utility Average) significantly underperformed the S&P 500.<sup>31</sup>

17  
18 Finally, regarding witness Garrett's required return on the  
19 market, I disagree with his calculation of the implied MRP  
20 because reasonable changes in his assumptions have  
21 considerable effects on the calculation (as will be  
22 discussed in detail in my critique of witness Garrett's  
23 CAPM analysis).

---

<sup>31</sup> The XLU and DJU gained 13.61 percent and 13.01 percent, respectively, while the S&P 500 gained 61.24 percent. Source: S&P Capital IQ.

1 Q. Have you calculated the investor-required return on the  
2 market for the period from 1990-2019?

3

4 A. Yes, I have. Using the Predictive Risk Premium Model  
5 (PRPM), I calculated the investor-required MRP for every  
6 month in the period from 1990-2019. I then averaged the  
7 monthly MRPs for each year and added the average 30-year  
8 Treasury bond yield to those averages to arrive at investor-  
9 required returns on the market for each year.

10

11 Q. Please explain the PRPM.

12

13 A. The PRPM, as published in the Journal of Regulatory  
14 Economics (JRE)<sup>32</sup> and The Electricity Journal (TEJ),<sup>33</sup> was  
15 developed from the work of Dr. Robert F. Engle, who shared  
16 the Nobel Prize in Economics in 2003, "for methods of  
17 analyzing economic time series with time-varying volatility  
18 (ARCH)"<sup>34</sup> (with "ARCH" standing for autoregressive  
19 conditional heteroskedasticity). Based on his work, Dr.  
20 Engle found that the volatility in market prices, returns,

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<sup>32</sup> See, Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D., *A New Approach for Estimating the Equity Risk Premium for Public Utilities*, *The Journal of Regulatory Economics*, December 2011, 40:261-278.

<sup>33</sup> See, Pauline M. Ahern, Richard A. Michelfelder, Ph.D., Rutgers University, Dylan W. D'Ascendis, and Frank J. Hanley, *Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model*, *The Electricity Journal*, May 2013.

<sup>34</sup> See, [www.nobelprize.org](http://www.nobelprize.org).



1 and equity risk premiums cluster over time, making them  
2 highly predictable and available to predict future levels  
3 of risk and risk premiums.

4  
5 The PRPM estimates the risk/return relationship directly as  
6 the predicted equity risk premium is generated by the  
7 predictability of volatility, or risk. Thus, the PRPM is  
8 not based on an estimate of investor behavior, but rather  
9 on the evaluation of the actual results of that behavior,  
10 *i.e.*, the variance of historical equity risk premiums.

11  
12 **Q.** How did you derive the investor-required return on the  
13 market using the PRPM?

14  
15 **A.** The inputs to the PRPM are the historical returns on large  
16 capitalization stocks minus the historical monthly yield on  
17 long-term U.S. Treasury securities for the period from  
18 January 1990 through December 2019.<sup>35</sup> Using a generalized  
19 form of ARCH, known as GARCH, each projected MRP was  
20 determined using Eviews® statistical software. When the  
21 GARCH model is applied to the historical returns data, it  
22 produces a predicted GARCH variance series<sup>36</sup> and a GARCH

---

<sup>35</sup> Source: 2020 SBBI® Yearbook, Stocks, Bonds, Bills, and Inflation®, Appendix A-1.

<sup>36</sup> Illustrated in Columns [1] and [2] on page 2 of Exhibit No. (DWD-1) Document No. 20.

1 coefficient.<sup>37</sup> I then averaged the monthly investor-  
2 required return for each year to determine an annual  
3 investor-required return, and then added the annual average  
4 long-term government bond yield for each year<sup>38</sup> to arrive  
5 at annual investor-required returns on the market for the  
6 period from 1990-2019.

7  
8 Next, I compared the investor-required return on the market  
9 to the average allowed ROEs for gas and electric utilities  
10 for each year. As shown on Document No. 12, the investor-  
11 required return on the market is consistently, and  
12 significantly, higher than the allowed returns for utility  
13 companies. These results make intuitive sense, as the ratio  
14 of allowed ROE versus required market return averages about  
15 0.70 percent, which is consistent with utility betas over  
16 the period. Given the above, witness Garrett's claim that  
17 allowed ROEs for utilities exceed investor-required market  
18 returns is misplaced. In addition, witness Garrett's claim  
19 that the excess returns awarded to utilities result in a  
20 transfer of wealth from customers to shareholders<sup>39</sup> is  
21 misplaced as well since Document No. 12 shows that utilities  
22 have not been earning excess returns.

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<sup>37</sup> Illustrated in Column [4] on page 2 of Exhibit No. (DWD-1) Document No. 20.

<sup>38</sup> Source: 2020 SBBI® Yearbook, Stocks, Bonds, Bills, and Inflation®, Appendix A-7.

<sup>39</sup> Direct Testimony of David J. Garrett, at 77.

1     **3.     Misapplication of the DCF Model**

2     **Q.**     Please briefly describe witness Garrett's Constant Growth  
3     DCF analyses and results.

4  
5     **A.**     Witness Garrett applies a quarterly form of the Constant  
6     Growth DCF Model, which produces an ROE estimate of 7.30  
7     percent. For the dividend yield component, witness Garrett  
8     relies on announced quarterly dividend payments and 30-day  
9     average stock prices as of July 21, 2020.<sup>40</sup> To estimate  
10    expected growth, witness Garrett looks to three measures,  
11    including: (1) nominal GDP, (2) inflation, and (3) the  
12    current Risk-Free rate.<sup>41</sup> Of those three measures, he  
13    chooses the highest estimate, 3.90 percent.<sup>42</sup>

14  
15    **Q.**     What are your general concerns with the growth rates on  
16    which witness Garrett's DCF analyses rely?

17  
18    **A.**     First, witness Garrett assumes a single, perpetual growth  
19    rate of 3.90 percent for all his proxy companies.<sup>43</sup> By  
20    reference to the Congressional Budget Office's ("CBO")  
21    expected inflation rate of 2.00 percent, witness Garrett's  
22    method assumes his proxy companies all will grow at real

---

<sup>40</sup> Exhibits DJG-3 and DJG-4.

<sup>41</sup> Exhibit DJG-5.

<sup>42</sup> Direct Testimony of David J. Garrett, at 57.

<sup>43</sup> Exhibit DJG-6.

1 rates of approximately 1.90 percent, in perpetuity.<sup>44</sup> It  
2 is unlikely an investor would be willing to assume the risks  
3 of equity ownership in exchange for expected growth only  
4 modestly greater than expected inflation. The risk simply  
5 is not worth the expected return.<sup>45</sup>

6  
7 As to witness Garrett's remaining growth rate estimates  
8 (presented in his Exhibit DJG-5), none are appropriate  
9 measures of growth for his DCF analysis. As a practical  
10 matter, because they are generic in nature, his estimates  
11 fail to account for the risks and prospects faced by the  
12 proxy companies.

13  
14 **Q.** Do you agree with the 3.90 percent growth rate assumed for  
15 all companies in witness Garrett's DCF analysis?

16  
17 **A.** No, I do not. Witness Garrett's 3.90 percent growth rate  
18 is not based on any measure of company-specific growth, or  
19 growth in the utility industry in general. Rather, his  
20 proxy group serves the sole purpose of calculating the  
21 dividend yield. Under the DCF model's strict assumptions,  
22 however, expected growth and dividend yields are  
23 inextricably related. Witness Garrett's assumption that

---

<sup>44</sup> Direct Testimony of David J. Garrett, at 50.

<sup>45</sup> In the risk/return space, debt securities, with a higher yield and considerably less risk of capital loss (if held to maturity) may be the preferred alternative.

1 one growth rate applies to all companies, even though  
2 dividend yields vary across those companies, has no basis  
3 in theory or practice.

4  
5 **Q.** Witness Garrett also offers his thoughts regarding the need  
6 for qualitative analyses in developing expected growth  
7 rates.<sup>46</sup> What is your response to witness Garrett's  
8 observations?

9  
10 **A.** Witness Garrett suggests that although equity analysts may  
11 consider such quantitative factors as historical growth in  
12 revenues or earnings, they also should consider  
13 "qualitative" factors, such as how a given company may meet  
14 some level of "sustainable" growth.<sup>47</sup> He further observes  
15 unregulated companies have options not available to  
16 utilities, and suggests it would be more appropriate to  
17 consider factors such as load growth in measuring growth  
18 rate expectations.<sup>48</sup>

19  
20 There is no question analysts consider qualitative factors.  
21 To that point, I reviewed Spire, Inc.'s (one of the  
22 companies in witness Garrett's proxy group) second quarter  
23 2020 conference call held on May 8, 2020. Analysts from

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<sup>46</sup> Direct Testimony of David J. Garrett, at 51-56.

<sup>47</sup> *Ibid.*, at 46-47.

<sup>48</sup> *Ibid.*, at 52-54.

1 several firms attended the call, including Bank of America,  
2 Crédit Suisse, JP Morgan Chase, and Sidoti & Company.  
3 During the call, analysts asked, and were given answers to  
4 a number of issues bearing directly on the factors relating  
5 to the Return on Common Equity, including sales estimates;  
6 earnings growth targets; capital expenditure plans; state  
7 regulatory mechanisms; and pending legislative action.<sup>49</sup>

8  
9 In Spire Inc.'s third quarter 2020 conference call (which  
10 took place on August 5, 2020), analysts were provided with  
11 updated and additional information. During the course of  
12 the call, the company's management reaffirmed its earnings  
13 growth targets and guidance, and discussed the regulatory  
14 environment in which it operates. After the company's  
15 presentation, the analysts asked questions along several  
16 lines, all of which are relevant to witness Garrett's  
17 construct, including: investment and development of new  
18 storage opportunities; effect of legislative outcomes; O&M  
19 expenses; and the impact of COVID-19.<sup>50</sup> These inquiries  
20 reflect the type of considerations analysts typically  
21 consider for utility companies.

22  
23 In the case of just one of his proxy companies, therefore,

---

<sup>49</sup> See, Spire, Inc., Q2 2020 Earnings Call Transcript, May 8, 2020.

<sup>50</sup> See, Spire, Inc., Q3 2020 Earnings Call Transcript, August 5, 2020.

1 the level of fundamental research performed by analysts on  
2 issues directly related to long-term growth reflected a  
3 variety of factors, both quantitative and qualitative.  
4 They certainly go beyond "mere increases to rate base or  
5 earnings."<sup>51</sup> The analysts' research also far exceeded  
6 witness Garrett's limited perspective that load growth  
7 forecasts, together with other "qualitative factors"  
8 support his 3.90 percent expected growth rate.

9  
10 **Q.** Why is long-term growth in GDP not an upper limit for  
11 terminal growth as witness Garrett contends?

12  
13 **A.** First, GDP is not a market measure - rather, it is a measure  
14 of the value of the total output of goods and services,  
15 excluding inflation, in an economy. While I understand  
16 that earnings per share (EPS) growth is also not a market  
17 measure, it is well established in financial literature  
18 that projected growth in EPS is the superior measure of  
19 dividend growth in a DCF model.<sup>52</sup> Furthermore, GDP is simply  
20 the sum of all private industry and government output in

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<sup>51</sup> Direct Testimony of David J. Garrett, at 54.

<sup>52</sup> See, for example, Robert Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return*, Financial Management, Spring 1986; Christofi, Christofi, Lori and Moliver, *Evaluating Common Stocks Using Value Line's Projected Cash Flows and Implied Growth Rate*, Journal of Investing, Spring 1999; Robert Harris and Felicia Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management, Summer 1992; and Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management, Spring 1988.

1 the United States, and its growth rate is simply an average  
2 of the value of those industries. To illustrate, Document  
3 No. 13 presents the compound annual growth rate ("CAGR") of  
4 the industries that comprise GDP from 1947 to 2019. Of the  
5 15 industries represented, seven industries, including  
6 utilities, grew faster than the overall GDP, and eight  
7 industries grew slower than the overall GDP.<sup>53</sup>

8  
9 **Q.** Is there a realistic possibility that a single industry  
10 would become the entire economy with a perpetual,  
11 "sustainable" growth rate higher than the GDP growth rate  
12 as witness Garrett contends?<sup>54</sup>

13  
14 **A.** No, and even if one assumed it was realistically possible,  
15 it would take an extraordinary amount of time to do so. To  
16 illustrate this point, I used the value added by industry  
17 from 1947 to 2019 in Document No. 13 and applied the CAGR  
18 for the highest growth rate industry (*i.e.*, Educational  
19 Services, Healthcare, and Social Assistance at 8.71 percent  
20 per year) to see when that industry would comprise the  
21 entire economy. In the year 2244, or 297 years from the  
22 1947 starting point, the industry would comprise over 50  
23 percent of GDP, and in the year 5449, 3,502 years after the

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<sup>53</sup> See, Exhibit No. (DWD-1) Document No. 13.

<sup>54</sup> Direct Testimony of David J. Garrett, at 16.



1 1947 starting point, the industry would comprise 100  
2 percent of GDP.<sup>55</sup> Therefore, witness Garrett's example<sup>56</sup>  
3 and his argument are without merit.

4  
5 **Q.** Please respond to witness Garrett's comment regarding  
6 "steady-state" growth rates.

7  
8 **A.** On page 48 of his direct testimony, witness Garrett states,  
9 "...it is not necessary to use multi-stage DCF Models to  
10 analyze the cost of equity of regulated utility companies.  
11 This is because regulated utilities are already in their  
12 'terminal,' low growth stage." While I agree with witness  
13 Garrett's statement regarding regulated utilities being in  
14 the "mature" stage in the company/industry life cycle, I  
15 disagree with his conclusion regarding the long-term growth  
16 rates of regulated utilities.

17  
18 As witness Garrett describes, the multi-stage DCF and its  
19 growth rates reflect the company/industry life cycle, which  
20 is typically described in three stages: (1) the growth

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<sup>55</sup> To put the amount of time that will take these two milestones to happen in perspective, 300 years ago, in the year 1719, France and Spain were at war in New France (now Louisiana), and approximately 3,476 years ago, in the year 1457 BC, the first recorded battle in military history, the Battle of Megiddo, was waged between the Egyptians, led by Pharaoh Thutmose III against Kadesh, Canaanite, Mitanni, and Amurru forces. See also, Zager and Evans, *In the Year 2525, on 2525* (Exordium & Terminus) (RCA 1968).

<sup>56</sup> Direct Testimony of David J. Garrett, at 16.

1 stage, which is characterized by rapidly expanding sales,  
2 profits, and earnings. In the growth stage, dividend payout  
3 ratios are low in order to grow the firm; (2) the transition  
4 stage, which is characterized by slower growth in sales,  
5 profits, and earnings. In the transition stage, dividend  
6 payout ratios increase, as their need for exponential  
7 growth diminishes; and (3) the maturity (steady-state)  
8 stage, which is characterized by limited, slightly  
9 attractive investment opportunities, and steady earnings  
10 growth, dividend payout ratios, and returns on equity.

11  
12 Since the utility industry is in the mature phase of the  
13 company life cycle, it is the company-specific projected  
14 EPS growth rate, not the projected GDP growth rate, that is  
15 the appropriate measure of growth in a Constant Growth DCF  
16 model.

17  
18 **Q.** Are there examples in basic finance texts that support your  
19 position?

20  
21 **A.** Yes. For example, in *Investments*, life cycles and multi-  
22 stage growth models are discussed:

23 As useful as the constant-growth DDM (dividend  
24 discount model) formula is, you need to remember  
25 that it is based on a simplifying assumption,

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namely, that the dividend growth rate will be constant forever. In fact, firms typically pass through life cycles with very different dividend profiles in different phases. In early years, there are ample opportunities for profitable reinvestment in the company. Payout ratios are low, and growth is correspondingly rapid. In later years, the firm matures, production capacity is sufficient to meet market demand, competitors enter the market, and attractive opportunities for reinvestment may become harder to find. In this mature phase, the firm may choose to increase the dividend payout ratio, rather than retain earnings. The dividend level increases, but thereafter it grows at a slower pace because the company has fewer growth opportunities.

Table 18.2 illustrates this pattern. It gives Value Line's forecasts of return on assets, dividend payout ratio, and 3-year growth in earnings per share for a sample of the firms in the computer software industry versus those of east coast electric utilities...

1 By in large, the software firms have attractive  
2 investment opportunities. The median return on  
3 assets of these firms is forecast to be 19.5%,  
4 and the firms have responded with high plowback  
5 ratios. Most of these firms pay no dividends at  
6 all. The high return on assets and high plowback  
7 result in rapid growth. The median growth rate  
8 of earnings per share in this group is projected  
9 at 17.6%.

10  
11 In contrast, the electric utilities are *more*  
12 *representative of mature firms*. Their median  
13 return on assets is lower, 6.5%; dividend payout  
14 is higher, 68%; and median growth is lower, 4.6%.

15 \*\*\*

16 To value companies with temporarily high growth,  
17 analysts use a multistage version of the dividend  
18 discount model. Dividends in the early high-  
19 growth period are forecast and their combined  
20 present value is calculated. Then, once the firm  
21 is projected to settle down to a *steady-growth*  
22 *phase*, the *constant-growth DDM* is applied to  
23 *value the remaining stream of dividends*.<sup>57</sup>

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<sup>57</sup> Bodie, Z., Kane, A., and Marcus, A. J., *Investments*, 7<sup>th</sup> Edition, McGraw-Hill Irwin, 2008, at 616-617.

1 (Clarification and emphasis added)

2  
3 The economics of the public utility business indicate that  
4 the industry is in the steady-state, or constant-growth  
5 stage of a multi-stage DCF, which would mean that the three-  
6 to five-year projected growth rates for each company would  
7 be the "steady-state" or terminal growth rate appropriate  
8 for the DCF model for utility companies, not the GDP growth  
9 rate, which is not a company-specific growth rate, nor is  
10 it an upward bound for growth, as discussed previously.

11  
12 **Q.** Witness Garrett expressed a concern about using analysts'  
13 projected EPS growth rates because he asserts that analysts  
14 consider rate base growth in their projected growth rates  
15 and that utilities' natural financial incentive is to  
16 increase rate base regardless of customer needs.<sup>58</sup> Please  
17 respond.

18  
19 **A.** The overall premise of witness Garrett's concern is without  
20 merit and should be dismissed. First, regulated utilities  
21 are only allowed to earn returns on and of assets that are  
22 considered used and useful in serving the needs of its  
23 customers. As the U.S. Supreme Court decision in *Duquesne*  
24 *Light Co. v. Barasch* states:

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<sup>58</sup> Direct Testimony of David J. Garrett, at 52-53.

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To the extent utilities' investments turn out to be bad ones (such as plants that are cancelled and so never used and useful to the public), the utilities suffer because the investments have no fair value and so justify no return.<sup>59</sup>

Additionally, capital projects undertaken by utility companies are often subject to prudence reviews from regulatory commissions, which would allow commissions to review and deny any capital project not deemed in the public interest. These two facts would eliminate any type of investment by the utility that is not needed to expressly provide safe, reliable service to their customers. Because of this, equity analysts correctly consider growth in rate base in determining their recommended growth rates for utilities.

Finally, as a depreciation expert, witness Garrett should recognize two things: (1) utility assets degrade over time and eventually need to be replaced; and (2) the assets replacing the degraded assets are usually significantly more expensive than the degraded assets. Because of this, rate base will grow consistently *ad infinitum*, which supports both the utility industry's mature position on the

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<sup>59</sup> U.S. Supreme Court, *Duquesne Light Co. v. Barasch*, No. 87-1160 (1989).

1 company/industry life cycle regarding steady and  
2 predictable growth, and the use of company-specific  
3 projected analysts' EPS growth rates for use in the Constant  
4 Growth DCF model.

5  
6 **Q.** Witness Garrett claims undue reliance on projected EPS  
7 growth rates in the DCF model will lead to upward spiraling  
8 ROEs for utility companies due to a feedback loop.<sup>60</sup> Please  
9 respond.

10  
11 **A.** As witness Garrett shows in his Figure 1 concerning annual  
12 authorized returns, and as illustrated in Exhibit (RBH-1),  
13 Document No. 16 of my direct testimony concerning  
14 individual authorized returns, an upward spiraling ROE  
15 simply does not exist. The independence of authorized ROEs  
16 and market data is consistent with conclusions reached by  
17 Dr. Bonbright, who states:

18 In the first place, commissions cannot forecast,  
19 except within wide limits, the effect their rate  
20 orders will have on the market prices of the  
21 stocks of the companies they regulate. In the  
22 second place, *whatever the initial market prices*  
23 *may be, they are sure to change not only with the*  
24 *changing prospects for earnings, but with the*

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<sup>60</sup> Direct Testimony of David J. Garrett, at 54-55.

1            *changing outlook of an inherently volatile stock*  
2            *market. In short, market prices are beyond the*  
3            *control, though not beyond the influence of rate*  
4            *regulation. Moreover, even if a commission did*  
5            *possess the power of control, any attempt to*  
6            *exercise it ... would result in harmful,*  
7            *uneconomic shifts in public utility rate levels.<sup>61</sup>*  
8            (Emphasis added)  
9

10           Given this, witness Garrett's concerns should be dismissed.

11

12           **4. Misapplication of the Capital Asset Pricing Model**

13           **Q.** Please summarize witness Garrett's CAPM analysis and  
14           results.

15

16           **A.** Witness Garrett's CAPM estimate relies on a risk-free rate  
17           of 1.41 percent, an average Market Risk Premium of 6.00  
18           percent, and Beta coefficients as reported by Value Line.  
19           Those assumptions combine to produce an average CAPM  
20           estimate of 6.50 percent.<sup>62</sup>

21

22           **Q.** Do you agree with witness Garrett's CAPM analysis?

23

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<sup>61</sup> James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, *Principles of Public Utility Rates*, Public Utilities Reports, Inc., 1988, at 334.  
<sup>62</sup> Exhibit DJG-11.



1     **A.**    No, I disagree with witness Garrett's sole reliance on  
2            historical Treasury yields to estimate the risk-free rate  
3            and the various methods he uses to estimate the Market Risk  
4            Premium.     Just as important as our methodological  
5            differences, however, is our difference regarding the  
6            reasonableness and reliability of an analysis that produces  
7            ROE estimates of 6.50 percent.

8  
9     **Q.**    Turning to the risk-free rate component of the CAPM, do you  
10           agree with witness Garrett's use of the average 30-year  
11           Treasury yield?

12  
13    **A.**    Although I agree it is appropriate to consider the current  
14           average 30-year Treasury yield, because the Cost of Equity  
15           is forward-looking, it also is important to reflect  
16           forward-looking expectations of the risk-free rate.    For  
17           that reason, I relied on the current 30-day average 30-year  
18           Treasury yield, as well as the projected near-term 30-year  
19           Treasury yield and the projected long-term 30-year Treasury  
20           yield as reported by *Blue Chip Financial Forecast*.<sup>63</sup>  
21           Relying on projected Treasury bond yields is especially  
22           important considering their recent significant volatility  
23           as shown on Document No. 14.

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<sup>63</sup>     Prepared Direct Testimony and Exhibit of Robert B. Hevert, at 70-71 and Document No. 6 of Exhibit No. (RBH-1).

1     **Q.**     How did witness Garrett derive his MRP estimate?

2

3     **A.**     Witness Garrett estimates his MRP by reviewing: (1) surveys  
4             of expected returns from IESE Business School and Graham  
5             and Harvey (5.6 percent and 4.4 percent, respectively); (2)  
6             an expected return reported by Duff & Phelps (6.0 percent);  
7             (3) an implied MRP from Dr. Damodaran (5.7 percent); and  
8             (4) an "Implied Equity Risk Premium" calculation (5.8  
9             percent).<sup>64</sup>     Based on those results, witness Garrett  
10            concludes that 6.00 percent, the high end of his range, is  
11            appropriate.

12

13    **Q.**     Do you have any concerns regarding witness Garrett's use of  
14             an expected MRP as his selected MRP in his CAPM analysis?

15

16    **A.**     Yes, I do.     The Duff & Phelps MRP selected by witness  
17             Garrett is an expected return, which has no relevance to  
18             the investor-required return.     As discussed previously,  
19             both witness Garrett and I agree that expected returns "have  
20             nothing to do with what the investor expects the ROE awarded  
21             by a regulatory commission to be."<sup>65</sup>

22

23             Widely used finance texts recommend the use of multiple

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<sup>64</sup>     Direct Testimony of David J. Garrett, at 71 and Exhibit DJG-10.

<sup>65</sup>     *Ibid.*, at 4

1 models in estimating the Cost of Equity, in particular the  
2 DCF, CAPM, and Risk Premium approaches. I reviewed articles  
3 published in financial journals, as well as additional  
4 texts that speak to the methods used by analysts to estimate  
5 the Cost of Equity. An article published in Financial  
6 Analysts Journal surveyed financial analysts to determine  
7 the analytical techniques that are used in practice.<sup>66</sup>  
8 Regarding stock price valuation and cost of capital  
9 estimation, the author asked respondents to comment only on  
10 the DCF, CAPM, and Economic Value-Added models. Nowhere in  
11 that article did the author consider asking whether surveys  
12 of expected returns are relevant to the determination of  
13 the Cost of Capital.

14  
15 Given witness Garrett's correct view that expected returns  
16 have nothing to do with the investor-required return and  
17 the lack of use by practitioners, his recommendation to use  
18 expected MRPs should be dismissed by the Commission.

19  
20 **Q.** Do the surveys referenced by witness Garrett provide  
21 reasonable MRP estimates for the purpose of estimating the  
22 Company's Cost of Equity?  
23

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<sup>66</sup> See, Stanley B. Block, *A Study of Financial Analysts: Practice and Theory*, Financial Analysts Journal, July/August 1999.

1     **A.**    No, they do not. For example, the Graham and Harvey survey  
2            suggests an expected return on the overall market of 6.79  
3            percent, based on a risk-free rate of 2.37 percent and an  
4            MRP of 4.42 percent.<sup>67</sup> Combining those estimates with  
5            witness Garrett's average Beta coefficient estimate of 0.85  
6            produces a Cost of Equity estimate of 6.13 percent,  
7            approximately 77 basis points below witness Garrett's  
8            estimate of the "true" Cost of Equity. Because utility  
9            stocks tend to be somewhat less risky than the broad market,  
10           if the Graham and Harvey survey results are meaningful,  
11           witness Garrett's ROE recommendation would be no more than  
12           6.79 percent. In fact, his recommendation exceeds the  
13           Graham and Harvey estimate by 271 basis points.

14  
15           As shown in Document No. 15 of my exhibit, in the past the  
16           Graham and Harvey survey respondents have provided  
17           forecasts that significantly underestimated actual market  
18           returns. As Document No. 15 demonstrates, from 2012 through  
19           2018 the average market return was 13.27 percent, about  
20           2.50 times greater than the Graham and Harvey survey average  
21           expected return of 5.30 percent.

22  
23           Graham and Harvey also have noted a distinction between the

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<sup>67</sup> See, Graham and Harvey, *The Equity Risk Premium in 2018*, at 7 for Q4 2017.

1 expected market return on one hand, and the "hurdle rate"  
2 on the other. In the Third Quarter 2017 survey, the authors  
3 reported an average hurdle rate, which is the return  
4 required for capital investments, of 13.50 percent. The  
5 authors further reported the average Weighted Average Cost  
6 of Capital, which includes the cost of debt, was 9.20  
7 percent even though the expected market return was 6.50  
8 percent.<sup>68</sup> As a result, I do not believe the Graham and  
9 Harvey surveys are a reasonable reflection of the expected  
10 MRP going forward.

11  
12 **Q.** Do any of the surveys cited by witness Garrett provide  
13 support for your approach to estimating the current MRP?  
14

15 **A.** Yes. As discussed in my direct testimony,<sup>69</sup> I calculated  
16 the *ex-ante* MRP in a similar manner to a study by Pablo  
17 Fernandez, *et al* (cited by witness Garrett), using the  
18 market capitalization weighted Constant Growth DCF  
19 calculation on the individual companies in the S&P 500  
20 Index.<sup>70</sup>

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<sup>68</sup> See, Duke/CFO Magazine Global Business Outlook survey - U.S., Third Quarter 2017.

<sup>69</sup> Prepared Direct Testimony and Exhibit of Robert B. Hevert, at 71-72.

<sup>70</sup> See, Pablo Fernandez, Alberto Ortiz, and Isabel Fernandez Acín, *Market Risk Premium used in 71 countries in 2016: a survey with 6,932 answers*, IESE Business School, May 9, 2016, at 10. Specifically, the study states:

[t]he [implied equity premium] is the implicit [required equity premium] used in the valuation of a stock (or market

1 Q. Is there academic literature that supports the conclusion  
2 that MRPs using surveys are not widely used by  
3 practitioners?  
4

5 A. Yes. Dr. Damodaran, who was cited several times by witness  
6 Garrett throughout his testimony, states the following  
7 about the applicability of survey MRPs:

8 While survey premiums have become more  
9 accessible, very few practitioners seem to be  
10 inclined to use the numbers from these surveys in  
11 computations and there are several reasons for  
12 this reluctance:

13 1. Survey risk premiums are responsive to  
14 recent stock prices movements, with survey  
15 numbers generally increasing after bullish  
16 periods and decreasing after market decline.  
17 Thus, the peaks in the SIA survey premium of  
18 individual investors occurred in the bull  
19 market of 1999, and the more moderate

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index) that matches the current market price. The most widely used model to calculate the [implied equity premium] is the dividend discount model: the current price ( $P_0$ ) is the present value of expected dividends discounted at the required rate of return ( $K_e$ ). If  $d_1$  is the dividend per share expected to be received in year 1, and  $g$  the expected long-term growth rate in dividends per share:

$$P_0 = d_1 / (K_e - g), \text{ which implies:}$$

$$[\text{implied equity premium}] = d_1/P_0 + g - R_f$$

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premiums of 2003 and 2004 occurred after the market collapse in 2000 and 2001.

2. Survey premiums are sensitive not only to whom the question is directed at but how the question is asked. For instance, individual investors seem to have higher (and more volatile) expected returns on equity than institutional investors and the survey numbers vary depending upon the framing of the question. [footnote omitted]

3. In keeping with other surveys that show differences across sub-groups, the premium seems to vary depending on who gets surveyed. Kaustia, Lehtoranta and Puttonen (2011) surveyed 1,465 Finnish investment advisors and note that not only are male advisors more likely to provide an estimate but that their estimated premiums are roughly 2percent lower than those obtained from female advisors, after controlling for experience, education and other factors. [footnote omitted]

4. Studies that have looked at the efficacy of survey premiums indicate that if they have any predictive power, it is in the wrong

1 direction. Fisher and Statman (2000)  
2 document the negative relationship between  
3 investor sentiment (individual and  
4 institutional) and stock returns.<sup>[footnote  
5 omitted]</sup> In other words, investors becoming  
6 more optimistic (and demanding a larger  
7 premium) is more likely to be a precursor to  
8 poor (rather than good) market returns.

9  
10 As technology aids the process, the number and  
11 sophistication of surveys of both individual and  
12 institutional investors will also increase.  
13 However, it is also likely that these survey  
14 premiums will be more reflections of the recent  
15 past rather than good forecasts of the future.<sup>71</sup>

16  
17 **Q.** Please now describe the method by which witness Garrett  
18 calculated his third estimate, the implied Market Risk  
19 Premium.

20  
21 **A.** As witness Garrett points out, his method develops the  
22 Internal Rate of Return that sets equal the current value  
23 of the market index to the projected value of cash flows

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<sup>71</sup> Aswath Damodaran, Stern School of Business, *Equity Risk Determinants, Estimation and Implications - The 2020 Edition*, Updated March 2020, at 26-27.



1 associated with owning the market index.<sup>72</sup> i Witness  
2 Garrett observes that Dr. Damodaran "promotes the implied  
3 ERP method."<sup>73</sup> Although there are some differences, witness  
4 Garrett's approach is similar to the model Dr. Damodaran  
5 provides on his website.<sup>74</sup>

6  
7 Witness Garrett's method, which is a two-stage form of the  
8 DCF model, calculates the present value of cash flows over  
9 the five-year initial period, together with the terminal  
10 price (based on the Gordon Model<sup>75</sup>), to be received in the  
11 last (*i.e.*, fifth) year. The model's principal inputs  
12 include the following assumptions:

- 13 • Over the coming five years, the S&P 500 Index (the  
14 "Index") will appreciate at a rate equal to the  
15 compound growth rate in "Operating Earnings" from 2014  
16 through 2019;
- 17 • Cash flows associated with owning the Index will be  
18 equal to the historical average Earnings, Dividends,  
19 and Buyback yields, applied to the projected Index  
20 value each year; and
- 21 • Beginning in the terminal year, the Index will  
22 appreciate, in perpetuity, at a rate equal to the 30-  
23 day average yield on 30-year Treasury securities, as

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<sup>72</sup> Direct Testimony of David J. Garrett, at 68-71.

<sup>73</sup> *Ibid.*, at 71.

<sup>74</sup> See, <http://pages.stern.nyu.edu/~adamodar>.

<sup>75</sup> Exhibit DJG-9.

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of July 21, 2020.<sup>76</sup>

As discussed below, reasonable changes to those assumptions have a considerable effect on witness Garrett's calculated expected market return.

**Q.** Do you have any observations regarding witness Garrett's assumed first-stage growth rate?

**A.** Yes. Witness Garrett's 5.37 percent growth rate relates to growth in operating earnings, and does not reflect capital appreciation, growth in dividends, or buy-backs.<sup>77</sup> In addition, if witness Garrett's position is that historical growth rates are meant to reflect expected future growth, they should reflect year-to-year variation (that is, uncertainty). That is best accomplished using the arithmetic mean. I therefore calculated the average growth (arithmetic mean) for the four metrics included in witness Garrett's exhibit. The average growth rate, 7.35 percent, produces an estimated market return of about 7.91 percent,<sup>78</sup> which is still well below historical experience.

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<sup>76</sup> Exhibits DJG-7 and DJG-9. The model also assumes that all payments are received at year-end, rather than during the year. That assumption also tends to under-state the Implied Market Risk Premium.  
<sup>77</sup> Exhibit DJG-9. Whereas the compound average growth rate in operating earnings was 5.37 percent, dividends and buybacks grew by 6.74 percent and 5.66 percent, respectively.  
<sup>78</sup> See, Document No. 16 of Exhibit No. (DWD-1), page 2.

1   **Q.**   Why did the market return increase by only 70 basis points  
2           (from 7.21 percent to 7.91 percent) when the first-stage  
3           growth rate increased by 198 basis points (from 5.37 to  
4           7.35 percent)?

5  
6   **A.**   Because witness Garrett's model assumes the first stage  
7           lasts for five years (and the terminal stage is perpetual),  
8           the results are sensitive to changes in the assumed terminal  
9           growth rate. To put that effect in perspective, the  
10          terminal value (which is directly related to the terminal  
11          growth rate) represents approximately 77.15 percent of the  
12          "Intrinsic Value" in witness Garrett's analysis.<sup>79</sup>

13  
14   **Q.**   How did witness Garrett develop his assumed terminal growth  
15          rate?

16  
17   **A.**   The terminal growth rate represents investors' expectations  
18          of the rate at which the broad stock market will grow, in  
19          perpetuity, beginning in the terminal year. Witness  
20          Garrett assumes terminal growth is best measured by the  
21          average yield on 30-year Treasury securities over the 30  
22          days ended July 21, 2020. That is, witness Garrett assumes  
23          the average 30-year Treasury yield between June 2020 and

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<sup>79</sup> See, Document No. 16 of Exhibit No. (DWD-1). Please note that regardless of the assumed first and terminal-stage growth rates, the terminal stage consistently represents approximately 76.00 percent of the Intrinsic Value.

1 July 2020 is the best measure of expected earnings growth  
2 beginning five years from now and extending indefinitely  
3 into the future.

4  
5 **Q.** Do you agree with witness Garrett's assumption?

6  
7 **A.** No, I do not. I recognize witness Garrett followed the  
8 approach described in Dr. Damodaran's method, which Dr.  
9 Damodaran refers to as a "default" assumption.<sup>80</sup> In terms  
10 of historical experience, over the long-term the broad  
11 economy has grown at a long-term compound average growth  
12 rate of approximately 6.09 percent.<sup>81</sup> Considered from  
13 another perspective, Duff & Phelps reports the long-term  
14 rate of capital appreciation on Large Company stocks to be  
15 7.90 percent.<sup>82</sup> Witness Garrett's model assumes, however,  
16 that the market index will grow by less than one-half that  
17 amount, 2.25 percent, over the coming four years.<sup>83</sup>

18  
19 Witness Garrett has not explained why growth beginning five  
20 years in the future, and extending in perpetuity, will be  
21 less than one-half of long-term historical growth. From a  
22 somewhat different perspective, assuming long-term

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<sup>80</sup> See, <http://pages.stern.nyu.edu/~adamodar>.

<sup>81</sup> Source: Bureau of Economic Analysis for the years 1929 to 2019.  
<https://www.bea.gov/data/gdp/gross-domestic-product>

<sup>82</sup> Duff & Phelps, 2020 SBBI® Yearbook, 6-17.

<sup>83</sup> See, Exhibit DJG-9.  $(3428/3137)^{(1/4)} - 1 = 2.25\%$ .

1 inflation will be approximately 2.00 percent<sup>84</sup> implies  
2 perpetual real growth will be approximately -0.578  
3 percent.<sup>85</sup> Again, witness Garrett assumes in the long run,  
4 real growth will in fact be negative in perpetuity. Nowhere  
5 in his testimony has witness Garrett explained the  
6 fundamental, systemic changes that would so dramatically  
7 reduce long-term economic growth, or why they are best  
8 measured by the long-term Treasury yield over 30 days  
9 between June 2020 to July 2020.

10  
11 Further, research by the Federal Reserve Bank of San  
12 Francisco calls into question the relationship between  
13 interest rates and macroeconomic growth. As the authors  
14 noted, “[o]ver the past three decades, it appears that  
15 private forecasters have incorporated essentially no link  
16 between potential growth and the natural rate of interest:  
17 The two data series have a zero correlation.”<sup>86</sup>

18  
19 Lastly, over the 30 trading days ended July 21, 2020, the  
20 30-year Treasury yield fell by 28 basis points, a decline

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<sup>84</sup> For example, in line with the Federal Reserve’s target average rate of inflation. See also, Exhibit DJG-5.

<sup>85</sup>  $-0.578\% = [(1.0141/1.02)-1]$ . Please note that the long-term historical average rate of inflation, measured by the difference between real and nominal GDP growth, has been approximately 2.79 percent, which would also imply perpetual negative real growth.

<sup>86</sup> FRBSF Economic Letter, *Does Slower Growth Imply Lower Interest Rates?*, November 10, 2014, at 3.

1 of about 17.61 percent.<sup>87</sup> Witness Garrett has not explained  
2 why such an abrupt and meaningful decline in Treasury yields  
3 should be taken as a measure of a sudden and abrupt decline  
4 in expected earnings growth five years from now.

5  
6 **Q.** Please briefly summarize your response to witness Garrett's  
7 Implied Equity Risk Premium calculation.

8  
9 **A.** Witness Garrett's calculation is based on a series of  
10 questionable assumptions, to which a small set of very  
11 reasonable adjustments produces a market return estimate  
12 more consistent with (yet still below) the historical  
13 experience he considers relevant. Although the revised  
14 results still produce ROE estimates far below any  
15 reasonable measure, they do point out the sensitive nature  
16 of witness Garrett's analyses, and the tenuous nature of  
17 the conclusions he draws from them.

18  
19 **Q.** Does witness Garrett employ an Empirical CAPM in his CAPM  
20 analysis?

21  
22 **A.** No, he does not. Witness Garrett fails to consider the  
23 ECAPM, despite the fact that numerous tests of the CAPM  
24 have confirmed that the empirical Security Market Line

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<sup>87</sup> Exhibit DJG-7.

1 (SML) described by the traditional CAPM is not as steeply  
2 sloped as the predicted SML as described in my direct  
3 testimony.<sup>88</sup> Because of the empirical findings presented  
4 in my direct testimony, witness Garrett should have  
5 considered the ECAPM in his CAPM analysis.

6  
7 **5. Refusal to Consider Flotation Costs and Other Company-**  
8 **Specific Factors in his ROE Recommendation**

9 **Q.** Did witness Garrett address the issue of flotation costs in  
10 his testimony?

11  
12 **A.** Yes. Witness Garrett reasons that flotation costs for stock  
13 issuances are not out-of-pocket costs, which investors  
14 already have considered when deciding to invest in a  
15 company's shares at a given market price.<sup>89</sup> On that basis,  
16 he argues against considering the effect of flotation costs  
17 in setting the Company's ROE.

18  
19 **Q.** What is your response to witness Garrett regarding the need  
20 to recover flotation costs?

21  
22 **A.** First, witness Garrett's observation that underwriter fees  
23 are not "out-of-pocket" expenses<sup>90</sup> is a distinction without

---

<sup>88</sup> See, Prepared Direct Testimony and Exhibits of Robert B. Hevert, at 42, 74-78.

<sup>89</sup> Direct Testimony of David J. Garrett, at 60-61.

<sup>90</sup> *Ibid.*, at 60.

1 a meaningful difference. Whether paid directly or  
2 indirectly through an underwriting discount, the cost  
3 results in net proceeds that are less than the gross  
4 proceeds. Witness Garrett points out that under federal  
5 law, the underwriters' compensation must be disclosed in  
6 the offering prospectus. I agree. In fact, those  
7 prospectuses are the source of the issuance costs included  
8 in Document No. 19 of Exhibit No. \_\_ (RBH-1) to my direct  
9 testimony. Because those costs were incurred, the net  
10 proceeds to the issuing company were less than the gross  
11 proceeds. Whether the issuer wrote a check or received the  
12 proceeds at a discount does not matter. What does matter  
13 is that issuance costs are a permanent reduction to common  
14 equity, and absent a recovery of those costs, the issuing  
15 company will not be able to earn its required return.

16  
17 Lastly, as shown in Document No. 17 of my Exhibit,<sup>91</sup> because  
18 of flotation costs, an authorized return of 10.85 percent  
19 would be required to realize an ROE of 10.75 percent (*i.e.*,  
20 a 10-basis point flotation cost adjustment). If flotation  
21 costs are not recovered, the growth rate falls and the ROE  
22 decreases to 10.65 percent (*i.e.*, below the required

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<sup>91</sup> This example is based on an analysis performed by Dr. Roger Morin. See, Roger A. Morin, *New Regulatory Finance*, Public Utility Reports, Inc., 2006, at 330-332.



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return).<sup>92</sup>

**Q.** Is the fact that investors are aware of equity issuance costs when they decide to purchase stock relevant to the determination of the appropriate compensation for those costs?<sup>93</sup>

**A.** No, it is not. Although witness Garrett suggests current prices account for flotation costs, he has provided no explanation as to how market prices compensate shareholders for flotation costs or any analyses to support his position. In that important respect, common stock is closely analogous to long-term debt, both in the sense that its purpose is to provide funding for long-term investments that are part of rate base, and that it remains a part of the utility's operations over the long run. Equity flotation costs and debt issuance expenses both are necessary and legitimate costs enabling the investment in assets needed to provide safe and reliable utility service; both should be recovered.

**Q.** Does witness Garrett consider the Company's overall growth and performance in his ROE recommendation for Peoples?

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<sup>92</sup> Document No. 17 of Exhibit No. (DWD-1) is provided for illustrative purposes only. Please note that I have not relied on the results of the analysis in determining my recommended ROE or range.

<sup>93</sup> Direct Testimony of David J. Garrett, at 60-61.

1     **A.**   No, witness Garrett does not consider any company-specific  
2           growth or risk factors in his analyses and ROE  
3           recommendation. As discussed above, witness Garrett's DCF  
4           analysis assumes one single growth rate for all companies  
5           in his proxy group. In addition, witness Garrett argues  
6           that "Because utilities are in their maturity stage, their  
7           real growth opportunities are primarily limited to the  
8           population growth within their defined service territories,  
9           which is usually less than 2%."<sup>94</sup> In his recommendation,  
10          witness Garrett fails to consider Peoples' total number of  
11          customers has increased significantly over the past several  
12          years<sup>95</sup> and most recently, from July 2019 to July 2020, the  
13          Company's growth in customer counts was approximately 5.20  
14          percent.<sup>96</sup> Unlike witness Garrett, I've taken into account  
15          several Company-specific factors, including the Company's  
16          superior performance and growth factors, in determining a  
17          reasonable ROE for Peoples. As discussed in my direct  
18          testimony, setting an ROE that recognizes the Company's  
19          significant customer growth and sustained high level of  
20          performance is an appropriate element of the Commission's  
21          regulatory discretion and supported by past Commission  
22          precedent.<sup>97</sup>

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<sup>94</sup>     *Ibid.*, at 49.

<sup>95</sup>     See, Prepared Direct Testimony and Exhibit of Robert B. Hevert, at 53.

<sup>96</sup>     See, Rebuttal Testimony and Exhibit of Sean P. Hillary, at 23; and Exhibit SPH-2.

<sup>97</sup>     Prepared Direct Testimony and Exhibit of Robert B. Hevert, at 53-55.

1    **Q.**    Witness Garrett suggests company-specific risks should not  
2           be reflected in the Company's Cost of Equity, because those  
3           risks are diversifiable.<sup>98</sup>  What is your response to witness  
4           Garrett on that point?

5  
6    **A.**    Looking to witness Garrett's Exhibit DJG-8, the Beta  
7           coefficients used in his CAPM analysis range from 0.80 to  
8           0.95, a difference of 0.15.  Even if we were to apply that  
9           difference to witness Garrett's unduly low Market Risk  
10          Premium estimate of 6.00 percent, the implied range of CAPM  
11          results would be 0.90 percentage points (90 basis points).  
12          Similarly, applying the standard deviation of witness  
13          Garrett's Beta coefficients (0.065) to his 6.00 percent  
14          Market Risk Premium produces a range of 0.39 percent (39  
15          basis points).  Because the range of witness Garrett's Beta  
16          coefficients (0.15) is within one standard deviation  
17          (0.39), we cannot say with certainty that company-specific  
18          risks are diversifiable (as witness Garrett suggests they  
19          will be).  Because the range of Beta coefficients produces  
20          a rather wide range of CAPM estimates (even assuming witness  
21          Garrett's Market Risk Premium), I continue to believe it is  
22          reasonable to consider company-specific risks in  
23          determining the Company's Cost of Equity.

24  

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<sup>98</sup>    Direct Testimony of David J. Garrett, at 35-38.

1 Q. Should the Commission consider Peoples as a stand-alone  
2 company?

3  
4 A. Yes, it should. Because it is the Company's rate base to  
5 which the overall rate of return set forth in this  
6 proceeding will be applied, the Company should be evaluated  
7 as a stand-alone entity. To do otherwise would be  
8 discriminatory, confiscatory, and inaccurate. It is also  
9 a basic financial precept that the use of the funds invested  
10 give rise to the risk of the investment. As Brealey and  
11 Myers state:

12 The true cost of capital depends on the use to  
13 which the capital is put.

14 \*\*\*

15 ***Each project should be evaluated at its own***  
16 ***opportunity cost of capital; the true cost of***  
17 ***capital depends on the use to which the capital***  
18 ***is put.***<sup>99</sup> (Italics and bold in original)

19  
20 Dr. Morin confirms Brealey and Myers when he states:

21 Financial theory clearly establishes that the  
22 cost of equity is the risk-adjusted opportunity  
23 cost of the investors and not the cost of the

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<sup>99</sup> Richard A. Brealey and Stewart C. Myers, *Principles of Corporate Finance*, McGraw-Hill, Inc., 1988, at 173, 198.

1 specific capital sources employed by the  
2 investors. The true cost of capital depends on  
3 the use to which the capital is put and not on  
4 its source. The *Hope* and *Bluefield* doctrines  
5 have made clear that the relevant considerations  
6 in calculating a company's cost of capital are  
7 the alternatives available to investors and the  
8 returns and risks associated with those  
9 alternatives.<sup>100</sup>

10  
11 Additionally, Levy and Sarnat state:

12 The firm's cost of capital is the discount rate  
13 employed to discount the firm's average cash  
14 flow, hence obtaining the value of the firm. It  
15 is also the weighted average cost of capital, as  
16 we shall see below. The weighted average cost of  
17 capital should be employed for project  
18 evaluation... only in cases where the risk profile  
19 of the new projects is a "carbon copy" of the  
20 risk profile of the firm<sup>101</sup>

21  
22 Although Levy and Sarnat discuss a project's cost of capital  
23 relative to a firm's cost of capital, these principles apply

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<sup>100</sup> Roger A. Morin, *New Regulatory Finance*, Public Utility Reports, Inc., 2006, at 523.

<sup>101</sup> Haim Levy & Marshall Sarnat, *Capital Investment and Financial Decisions*, Prentice/Hall International, 1986, at 465.

1           equally to the use of a proxy group-based cost of capital.  
2           Each company must be viewed on its own merits, regardless  
3           of the source of its equity capital. As *Bluefield* clearly  
4           states:

5                     A public utility is entitled to such rates as  
6                     will permit it to earn a return on the value of  
7                     the property which it employs for the convenience  
8                     of the public equal to that generally being made  
9                     at the same time and in the same general part of  
10                    the country on investments in other business  
11                    undertakings which are attended by corresponding  
12                    risks and uncertainties;<sup>102</sup>

13  
14           In other words, it is the "risks and uncertainties"  
15           surrounding the property employed for the "convenience of  
16           the public" which determines the appropriate level of  
17           rates. In this proceeding, the property employed "for the  
18           convenience of the public" is the rate base of the Company.  
19           Thus, it is only the risk of investment in the Peoples'  
20           rate base that is relevant to the determination of the cost  
21           of common equity to be applied to the common equity-financed  
22           portion of that rate base.

23  

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<sup>102</sup> *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1923), at 6.

1 Consistent with the financial principle of risk and return  
2 discussed previously, and the stand-alone nature of  
3 ratemaking, company-specific characteristics must be  
4 considered in determining the appropriate investor-required  
5 return for any particular company, including Peoples.  
6

7 **6. Response to witness Garrett's Critiques of Company**  
8 **Testimony**

9 **Q.** Does witness Garrett have any critiques of your analyses  
10 presented in your direct testimony?  
11

12 **A.** Yes, he does. Witness Garrett's critiques of my direct  
13 testimony are summarized below:

- 14 1) My requested ROE is in excess of the investor-required  
15 return on the market;
- 16 2) My growth rates used in the DCF model exceed GDP  
17 growth;
- 18 3) Flotation costs should not be included in the ROE;
- 19 4) My MRP is unreasonable because it is unconventionally  
20 derived and not in line with his MRP estimates;
- 21 5) My Risk Premium Model (RPM) is not a "real" risk  
22 premium model (not based on Nobel Prize-winning work)  
23 and is only used by utility witnesses; and
- 24 6) The approved returns used in my RPM are all in excess  
25 of market returns.

1 I have addressed critiques 1 through 3 and 6 during the  
2 course of this rebuttal testimony. I will discuss witness  
3 Garrett's remaining critiques in turn.  
4

5 **Q.** At page 16 of his testimony, witness Garrett criticizes  
6 your method of calculating the expected market return by  
7 pointing to the expected growth rate for a single company.  
8 What is your response to witness Garrett on that point?  
9

10 **A.** Witness Garrett's criticism has no merit. In determining  
11 the expected growth rate that underlies the expected market  
12 return, the salient points are twofold: (1) investors rely  
13 on analysts' growth rate projections to frame their  
14 investment decisions; and (2) because we are estimating the  
15 market return, it is the expected return on the 500  
16 companies in the S&P 500 that matters.  
17

18 As to the first point, witness Garrett has not shown  
19 investors avoid analysts' projections. He certainly has  
20 not shown investors find his 7.20 percent expected market  
21 return (based on his Implied Equity Risk Premium analysis)  
22 more reliable than the combined estimates of the many  
23 analysts that follow the companies comprising the S&P 500.  
24 Regarding the second point, over time the average annual  
25 total return on large company stocks has been about 12.10



1 percent.<sup>103</sup> From 2014-2019, the period on which witness  
2 Garrett's Implied Equity Risk Premium is based, the average  
3 return was 12.66 percent.<sup>104</sup>

4  
5 Additionally, although witness Garrett observes one company  
6 in my analysis with a high, positive growth rate, he fails  
7 to point out the several with negative growth rates. At  
8 any time, the market includes both high and low-growth  
9 companies. For example, the expected return on the market,  
10 as calculated in Document No. 4 of Exhibit No. (RBH-1) using  
11 Bloomberg data, includes 40 growth rates equal to or lower  
12 than the 2.00 percent inflation estimate<sup>105</sup> witness Garrett  
13 considers in his DCF analysis. Thirty-one of those growth  
14 rates are negative, as low as negative 63.83 percent.  
15 Although negative growth companies will not exist over the  
16 long-term (a company cannot shrink forever), my approach  
17 does not remove them; doing so would introduce the sort of  
18 "survivorship bias" with which witness Garrett is  
19 concerned.<sup>106</sup> The purpose of the analysis is to estimate  
20 the return investors expect for the market as a whole,  
21 including high and low-growth companies, not to estimate  
22 the aggregate return for companies that witness Garrett  
23 believes have proper growth rates.

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<sup>103</sup> Duff & Phelps, 2020 SBBI® Yearbook, 6-17.

<sup>104</sup> Duff & Phelps, 2020 SBBI® Yearbook, Appendix A-1.

<sup>105</sup> Direct Testimony of David J. Garrett, at 50.

<sup>106</sup> *Ibid.*, at 66-67.

1 Finally, my MRP estimates are consistent with actual  
2 realized MRPs. As shown on Document No. 18, MRPs of 12.51  
3 percent and 12.46 percent are in the 59th percentile of  
4 historical MRPs.

5  
6 **Q.** Is the calculation of the *ex-ante* return using the DCF model  
7 on the constituent companies of a market index a commonly  
8 accepted practice?

9  
10 **A.** Yes, it is. The Chartered Financial Analyst ("CFA")  
11 Institute Research Foundation states the following:

12 Approaches to estimating the ERP fall into three  
13 broad categories:

14 1. Methods based on a dividend discount model  
15 (DDM), earnings discount model, or cash-flow-to-  
16 the-investor discount model: forward-looking  
17 methods with their roots in discounted cash flow  
18 (DCF) analysis, wherein the value of an asset is  
19 regarded as the present value of the cash flows  
20 the asset is expected to generate... The earliest  
21 estimates of the ERP were derived by estimating  
22 the expected return on an equity portfolio using  
23 the DDM and then subtracting the expected return  
24 or yield on the riskless asset. This "DDM  
25 approach" which made a comeback at the end of the

1           20<sup>th</sup> century, is the method most widely used  
2           today.<sup>107</sup>

3  
4           In *New Regulatory Finance*, Dr. Morin states:

5           A second approach is to estimate the MRP is  
6           prospective in nature and consists of applying  
7           the DCF model to a representative market index,  
8           such as the Standard & Poor's 500 Index, *Value*  
9           *Line* Composite, or the New York Stock Exchange  
10          index... If risk premiums are volatile, this  
11          method of directly measuring  $r_m$  is preferred.  
12          Subtracting the current risk-free rate from that  
13          estimate produces a valid estimate of the market  
14          risk premium.<sup>108</sup>

15  
16          Finally, Brigham and Daves state:

17          An alternative to the historical risk premium is  
18          to estimate a forward-looking, or *ex-ante* risk  
19          premium. The most common approach is to use the  
20          Discounted Cash Flow (DCF) model to estimate the  
21          expected market rate of return,  $r^{\wedge} = r_m$ , and then  
22          calculate  $RP_m$  as  $r_m - r_{rf}$ <sup>109</sup>

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<sup>107</sup> CFA Institute Research Foundation, Literature Review, *The Equity Risk Premium: A Contextual Literature Review*, at 2.  
<sup>108</sup> Roger A. Morin, *New Regulatory Finance*, Public Utility Reports, Inc., 2006, at 159-160.  
<sup>109</sup> Eugene F. Brigham and Phillip R. Daves, *Intermediate Financial Management*, 9<sup>th</sup> Edition, Thomson/Southwestern, 2007, at 325.

1 **Q.** Witness Garrett states that your MRP is unreasonable in  
2 view of his measures of MRP as presented in his CAPM  
3 analysis.<sup>110</sup> Please respond.

4  
5 **A.** I have discussed the inapplicability of witness Garrett's  
6 MRP estimates for cost of capital purposes previously in  
7 this rebuttal testimony and will not repeat that discussion  
8 here. Since witness Garrett's MRP measures are not valid  
9 MRPs, they cannot be comparable to my MRP estimates. In  
10 prior proceedings, I have applied several different methods  
11 to estimate the estimated market return. As shown in  
12 Document No. 19, applying the methods I have used in other  
13 testimonies result in estimated returns on the market  
14 substantially similar to the estimated market returns  
15 applied in this proceeding, which would translate into  
16 similar MRPs as calculated in my direct testimony.

17  
18 Given all of the above, my calculation of the *ex-ante* MRP  
19 in my CAPM and ECAPM analysis is reasonable in view of  
20 historical returns and other expected measures of the MRP  
21 and is supported by financial literature. Thus, witness  
22 Garrett's concern should be dismissed.

23  
24 **Q.** Does witness Garrett agree with your application of the

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<sup>110</sup> Direct Testimony of David J. Garrett, at 10, 75.

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RPM?

**A.** No, he does not. Witness Garrett disagrees with the analysis because he believes “these types of risk premium ‘models’ are merely clever devices used to perpetuate the discrepancy between awarded ROEs and market-based cost of equity.”<sup>111</sup> Witness Garrett further believes the Bond Yield Plus Risk Premium analysis is unnecessary because “we already have a real risk premium model to use: the CAPM.”<sup>112</sup> He then asserts “the risk premium models used by utility witnesses are almost exclusively found in the texts and testimonies of such witnesses.”<sup>113</sup> Lastly, witness Garrett suggests my Bond Yield Plus Risk Premium analysis contradicts my position that Cost of Equity is a forward-looking concept.<sup>114</sup>

**Q.** What is your response to witness Garrett’s assertion that authorized returns are disconnected from the “true” Cost of Equity?<sup>115</sup>

**A.** I disagree. As explained in detail above, allowed returns are indeed measures of the investor-required return and the

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<sup>111</sup> *Ibid.*, at 76.  
<sup>112</sup> *Ibid.*, at 77.  
<sup>113</sup> *Ibid.*, at 78.  
<sup>114</sup> *Ibid.*, at 76.  
<sup>115</sup> *Ibid.*, at 76-77.

1 allowed returns for utility companies are indeed lower than  
2 the investor-required return on the market. Despite  
3 witness Garrett's concerns, authorized returns and their  
4 associated proceedings reflect the same type of market-  
5 based analyses at issue in this proceeding. Because  
6 authorized returns are publicly available (the proxy  
7 companies disclose authorized returns, by jurisdiction, in  
8 their 2019 SEC Form 10-Ks),<sup>116</sup> it therefore is reasonable to  
9 conclude that data is reflected, at least to some degree,  
10 in investors' return requirements.

11  
12 Further, although there is no disagreement that every case  
13 has its unique set of issues and circumstances, reviewing  
14 approximately 1,160 cases over many economic cycles and  
15 using that data to develop the relationship between the  
16 Equity Risk Premium and interest rates mitigates that  
17 concern. As such, witness Garrett's concerns that  
18 authorized returns may be influenced by factors other than  
19 objective market drivers is unfounded.

20  
21 **Q.** Is witness Garrett correct when he asserts that Bond Yield  
22 Plus Risk Premium models are not covered in financial texts,

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<sup>116</sup> See, for example, Atmos Energy Corporation, SEC Form 10-K for the year ended September 30, 2019, at 7-8; Southwest Gas Corporation., SEC Form 10-K for the year ended December 31, 2019, at 9-12; Northwest Natural Gas Company, SEC Form 10-K for the year ended December 31, 2019, at 39.

1 but almost exclusively found in texts written by utility  
2 witnesses?<sup>117</sup>

3  
4 **A.** No, witness Garrett's statement is incorrect in several  
5 respects. Although once again witness Garrett does not  
6 explain what he means by "almost exclusively" in this  
7 context, the Bond Yield Plus Risk Premium approach  
8 generally is covered in basic finance texts, including for  
9 example, Brigham and Gapenski:

10 Whereas debt and preferred stocks are contractual  
11 obligations which have easily determined costs,  
12 it is not at all easy to estimate [the Cost of  
13 Equity]. However, three methods can be used: (1)  
14 the Capital Asset Pricing Model (CAPM), (2) the  
15 discounted cash flow (DCF) model, and (3) the  
16 bond-yield-plus-risk-premium approach. These  
17 methods should not be regarded as mutually  
18 exclusive-no one dominates the others, and all  
19 are subject to error when used in practice.  
20 Therefore, when faced with the task of estimating  
21 a company's cost of equity, we generally use all  
22 three methods and then choose among them on the  
23 basis of our confidence in the data used for each

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<sup>117</sup> Direct Testimony of David J. Garrett, at 78.

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in the specific case at hand.<sup>118</sup>

The point made by my Risk Premium approach, which is that the Equity Risk Premium is inversely related to interest rates, also is the subject of published academic research, as noted at page 79 of my direct testimony. Although witness Garrett believes such research is only provided by utility witnesses, public academic research performed by Staff members of the Virginia Corporation Commission (*i.e.*, Maddox, Pippert, and Sullivan) has also shown the Equity Risk Premium to be inversely related to interest rates.<sup>119</sup> Those authors also found that the Equity Risk Premium is not stable over time, and increases as interest rates decrease. In short, witness Garrett's assertion is highly questionable, but the important finding that Equity Risk Premiums are nonconstant and vary with interest rates is not.

Lastly, witness Garrett's statement that Risk Premium models are "almost" exclusively found in utility witness' testimony is dubious, as well. In recent cases, I have seen regulatory staff witnesses include Risk Premium

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<sup>118</sup> Eugene F. Brigham, Louis C. Gapenski, *Financial Management, Theory and Practice*, The Dryden Press., 1994, at 341.  
<sup>119</sup> Farris M. Maddox, Donna T. Pippert, and Rodney N. Sullivan, *An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry*, *Financial Management*, Autumn 1995, at 89-95.



1 analyses in Texas (PUC Docket Nos. 49421 and 49494), North  
2 Carolina (Docket No. G-9, Sub 743), and Arkansas (Docket  
3 No. 19-008-U). I am not sure what witness Garrett intends  
4 by "almost exclusively", but his assertions that the method  
5 "is used to justify a cost of equity that is much higher  
6 than one that would be dictated by market forces"<sup>120</sup>, and  
7 that the model is "used to perpetuate the discrepancy  
8 between awarded ROEs and market-based cost of equity"<sup>121</sup>,  
9 simply are incorrect. An alternative, and a more likely  
10 interpretation, is that witness Garrett's view that the  
11 Cost of Equity is less than 7.30 percent is inconsistent  
12 with the findings of regulatory commissions who have  
13 considered expert testimony from many sources over many  
14 years.

15  
16 **Q.** What is your response to witness Garrett's position that  
17 your Bond Yield Plus Risk Premium analysis is not forward-  
18 looking?<sup>122</sup>

19  
20 **A.** Witness Garrett's conclusion is incorrect. The approach  
21 quantifies the longstanding principle that the Equity Risk  
22 Premium is not constant, but varies over time, and with  
23 market conditions. The model I have applied reflects

---

<sup>120</sup> Direct Testimony of David J. Garrett, at 78.

<sup>121</sup> *Ibid.*, at 76.

<sup>122</sup> *Ibid.*

1 variable market conditions in changing interest rates.  
2 Applying forward-looking (that is, projected) interest  
3 rates will produce varying estimates of the Equity Risk  
4 Premium (see, Document No. 7 of Exhibit No. (RBH-1) and  
5 Document No. 7 of Exhibit No. (DWD-1)). The model, and its  
6 results, therefore, are forward-looking.  
7

8 **Q.** Do you have a response to witness Garrett's claim that your  
9 RPM is not a "real" RPM because it is not based on Nobel  
10 Prize-winning work?  
11

12 **A.** While my RPM is not based on Nobel Prize-winning work, it  
13 is based on considerable empirical research, as noted  
14 above. Additionally, the DCF model is not based on Nobel  
15 Prize-winning work, either, but it does not prevent me or  
16 witness Garrett from considering the DCF model's results in  
17 our ROE analyses. Finally, I performed the PRPM (which is  
18 based on Nobel Prize-winning work, as discussed above) on  
19 the companies in my proxy group. As shown on Document No.  
20 20, PRPM results for my proxy group range from 9.38 percent  
21 to 11.90 percent, averaging 10.39 percent. Despite witness  
22 Garrett's concerns, all of these models provide valuable  
23 insight into the investor-required ROE.  
24

25 **VI. SUMMARY AND CONCLUSIONS**

1   **Q.**   Should any or all of the arguments made by witness Garrett  
2           persuade the Commission to lower the ROE it approves for  
3           Peoples below your recommendation?  
4

5   **A.**   No, they should not.   Based on the analyses discussed  
6           throughout my rebuttal testimony, and given the current  
7           capital market conditions, I continue to believe that the  
8           reasonable range of ROE estimates is from 10.00 percent to  
9           11.00 percent, and within that range 10.75 percent  
10          continues to be a reasonable, although conservative,  
11          estimate of the Company's Cost of Equity.  It will provide  
12          Peoples with sufficient earnings to enable it to attract  
13          necessary new capital efficiently and at a reasonable cost.  
14

15   **Q.**   Does this conclude your rebuttal testimony?  
16

17   **A.**   Yes, it does.  
18  
19  
20  
21  
22  
23  
24  
25

DOCKET NO. 20200051-GU

DOCKET NO. 20200166-GU

WITNESS: D'ASCENDIS

EXHIBIT

OF

DYLAN W. D'ASCENDIS

ON BEHALF OF PEOPLES GAS SYSTEM

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**Summary of Median Constant Growth DCF Results<sup>1</sup>**

	<b>Low ROE</b>	<b>Mean ROE</b>	<b>High ROE</b>
30-Day Average	7.55%	9.75%	11.37%
90-Day Average	7.46%	9.66%	11.41%
180-Day Average	7.27%	9.60%	11.33%

**Summary of CAPM Results**

	<b>Bloomberg Derived Market Risk Premium</b>	<b>Value Line Derived Market Risk Premium</b>
<i>Average Bloomberg Beta Coefficient</i>		
Current 30-Year Treasury (1.32%)	12.81%	12.86%
Near Term Projected 30-Year Treasury (1.60%)	13.09%	13.13%
Long Term Projected 30-Year Treasury (3.40%)	14.89%	14.93%
<i>Average Value Line Beta Coefficient</i>		
Current 30-Year Treasury (1.32%)	12.00%	12.04%
Near Term Projected 30-Year Treasury (1.60%)	12.28%	12.32%
Long Term Projected 30-Year Treasury (3.40%)	14.08%	14.12%

1 For the purposes of my Rebuttal Testimony, I have put more emphasis on the median results of my Constant Growth DCF analysis, because the mean results are affected by an anomalously high growth rate for Northwest Natural Gas Company of 24.50 percent from Value Line due to the company's significant losses in 2017.

**Summary of Empirical CAPM Results**

	<b>Bloomberg Derived  Market Risk Premium</b>	<b>Value Line Derived  Market Risk Premium</b>
<i>Average Bloomberg Beta Coefficient</i>		
Current 30-Year Treasury (1.32%)	13.05%	13.10%
Near Term Projected 30-Year Treasury (1.60%)	13.33%	13.38%
Long Term Projected 30-Year Treasury (3.40%)	15.13%	15.18%
<i>Average Value Line Beta Coefficient</i>		
Current 30-Year Treasury (1.32%)	12.45%	12.49%
Near Term Projected 30-Year Treasury (1.60%)	12.72%	12.77%
Long Term Projected 30-Year Treasury (3.40%)	14.52%	14.57%

**Bond Yield Risk Premium Results**

<b>Treasury Yield</b>	<b>Return on Equity</b>
Current 30-Year Treasury (1.32%)	10.38%
Near Term Projected 30-Year Treasury (1.60%)	10.14%
Long Term Projected 30-Year Treasury (3.40%)	9.90%



**Expected Earnings Results**

	<b>Return on Equity</b>
Low	7.04%
Median	9.14%
High	12.10%
Average	9.29%

Constant Growth Discounted Cash Flow Model  
30 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.30	\$103.24	2.23%	2.31%	7.30%	7.25%	7.00%	9.04%	7.65%	9.31%	9.96%	11.37%
New Jersey Resources Corporation	NJR	\$1.25	\$31.64	3.95%	4.04%	6.00%	6.00%	2.00%	4.04%	4.51%	5.99%	8.55%	10.07%
Northwest Natural Holding Company	NWN	\$1.91	\$53.37	3.58%	3.74%	3.90%	3.90%	24.50%	4.41%	9.18%	7.55%	12.92%	28.52%
ONE Gas, Inc.	OGS	\$2.16	\$75.71	2.85%	2.93%	5.50%	5.00%	6.50%	4.61%	5.40%	7.53%	8.33%	9.45%
South Jersey Industries, Inc.	SJI	\$1.18	\$23.45	5.03%	5.29%	10.70%	10.70%	12.50%	7.08%	10.25%	12.29%	15.54%	17.85%
Southwest Gas Holdings, Inc.	SWX	\$2.28	\$68.70	3.32%	3.42%	5.00%	4.00%	9.00%	7.30%	6.33%	7.38%	9.75%	12.47%
Spire Inc.	SR	\$2.49	\$61.19	4.07%	4.16%	4.80%	4.71%	5.50%	3.81%	4.70%	7.95%	8.87%	9.68%
Proxy Group Mean				3.58%	3.70%	6.17%	5.94%	9.57%	5.76%	6.86%	8.29%	10.56%	14.20%
Proxy Group Median				3.58%	3.74%	5.50%	5.00%	7.00%	4.61%	6.33%	7.55%	9.75%	11.37%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals indicated number of trading day average as of August 31, 2020
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.5 x [9])
- [5] Source: Zacks
- [6] Source: Yahoo! Finance
- [7] Source: Value Line
- [8] Source: Exhibit No. (DWD-1) Document No. 3, Value Line
- [9] Equals Average([5], [6], [7], [8])
- [10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
- [11] Equals [4] + [9]
- [12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model  
90 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] First Call Earnings Growth	[7] Value Line Earnings Growth	[8] Retention Growth Estimate	[9] Average Earnings Growth	[10] Low ROE	[11] Mean ROE	[12] High ROE
Atmos Energy Corporation	ATO	\$2.30	\$101.29	2.27%	2.36%	7.30%	7.25%	7.00%	9.04%	7.65%	9.35%	10.01%	11.41%
New Jersey Resources Corporation	NJR	\$1.25	\$32.48	3.85%	3.94%	6.00%	6.00%	2.00%	4.04%	4.51%	5.89%	8.44%	9.96%
Northwest Natural Holding Company	NWN	\$1.91	\$57.32	3.33%	3.48%	3.90%	3.90%	24.50%	4.41%	9.18%	7.30%	12.66%	28.24%
ONE Gas, Inc.	OGS	\$2.16	\$77.58	2.78%	2.86%	5.50%	5.00%	6.50%	4.61%	5.40%	7.46%	8.26%	9.37%
South Jersey Industries, Inc.	SJI	\$1.18	\$25.19	4.68%	4.92%	10.70%	10.70%	12.50%	7.08%	10.25%	11.93%	15.17%	17.48%
Southwest Gas Holdings, Inc.	SWX	\$2.28	\$70.62	3.23%	3.33%	5.00%	4.00%	9.00%	7.30%	6.33%	7.29%	9.66%	12.37%
Spire Inc.	SR	\$2.49	\$66.51	3.74%	3.83%	4.80%	4.71%	5.50%	3.81%	4.70%	7.62%	8.54%	9.35%
Proxy Group Mean				3.41%	3.53%	6.17%	5.94%	9.57%	5.76%	6.86%	8.12%	10.39%	14.03%
Proxy Group Median				3.33%	3.48%	5.50%	5.00%	7.00%	4.61%	6.33%	7.46%	9.66%	11.41%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals indicated number of trading day average as of August 31, 2020
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.5 x [9])
- [5] Source: Zacks
- [6] Source: Yahoo! Finance
- [7] Source: Value Line
- [8] Source: Exhibit No. (DWD-1) Document No. 3, Value Line
- [9] Equals Average([5], [6], [7], [8])
- [10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
- [11] Equals [4] + [9]
- [12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model  
180 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.30	\$104.96	2.19%	2.28%	7.30%	7.25%	7.00%	9.04%	7.65%	9.27%	9.92%	11.33%
New Jersey Resources Corporation	NJR	\$1.25	\$35.55	3.52%	3.59%	6.00%	6.00%	2.00%	4.04%	4.51%	5.55%	8.10%	9.62%
Northwest Natural Holding Company	NWN	\$1.91	\$63.01	3.03%	3.17%	3.90%	3.90%	24.50%	4.41%	9.18%	6.99%	12.35%	27.90%
ONE Gas, Inc.	OGS	\$2.16	\$83.01	2.60%	2.67%	5.50%	5.00%	6.50%	4.61%	5.40%	7.27%	8.08%	9.19%
South Jersey Industries, Inc.	SJI	\$1.18	\$27.15	4.35%	4.57%	10.70%	10.70%	12.50%	7.08%	10.25%	11.58%	14.81%	17.12%
Southwest Gas Holdings, Inc.	SWX	\$2.28	\$71.75	3.18%	3.28%	5.00%	4.00%	9.00%	7.30%	6.33%	7.24%	9.60%	12.32%
Spire Inc.	SR	\$2.49	\$72.97	3.41%	3.49%	4.80%	4.71%	5.50%	3.81%	4.70%	7.28%	8.20%	9.01%
Proxy Group Mean				3.18%	3.29%	6.17%	5.94%	9.57%	5.76%	6.86%	7.88%	10.15%	13.78%
Proxy Group Median				3.18%	3.28%	5.50%	5.00%	7.00%	4.61%	6.33%	7.27%	9.60%	11.33%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals indicated number of trading day average as of August 31, 2020
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.5 x [9])
- [5] Source: Zacks
- [6] Source: Yahoo! Finance
- [7] Source: Value Line
- [8] Source: Exhibit No. (DWD-1) Document No. 3, Value Line
- [9] Equals Average([5], [6], [7], [8])
- [10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
- [11] Equals [4] + [9]
- [12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Retention Growth Estimate

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
	Projected Earnings per share 2023-2025	Projected Dividend per share 2023-25	Retention Ratio (B)	Projected Book Value per Share 2023-25	Return on Book Value (R)	B x R	Projected Common Shares Outstanding 2020	Projected Common Shares Outstanding 2023-25	Common Shares Growth Rate	2020 High Price	2020 Low Price	2020 Price Midpoint	Projected Book Value per Share 2020	Market/Book Ratio	"S"	"V"	S x V	BR + SV
Company	Ticker																	
Amos Energy Corporation	ATO	6.00	3.00	50.00%	66.20	4.53%	124.00	145.00	5.30%	\$ 121.10	\$ 77.90	\$ 99.50	53.75	1.85	9.81%	45.98%	4.51%	9.04%
New Jersey Resources Corporation	NJR	2.40	1.57	34.58%	25.80	3.22%	96.00	100.00	1.36%	\$ 44.70	\$ 21.10	\$ 32.90	20.50	1.60	2.18%	37.69%	0.82%	4.04%
Northwest Natural Holding Company	NWN	3.20	1.97	38.44%	38.40	3.20%	31.00	32.00	1.05%	\$ 77.30	\$ 50.40	\$ 63.85	29.70	2.15	2.26%	53.48%	1.21%	4.41%
ONE Gas, Inc.	OGS	4.75	2.80	41.05%	54.10	3.60%	53.00	55.00	1.23%	\$ 97.00	\$ 63.70	\$ 80.35	44.15	1.82	2.24%	45.05%	1.01%	4.61%
South Jersey Industries, Inc.	SJI	2.50	1.40	44.00%	20.45	5.38%	101.00	110.00	2.86%	\$ 33.40	\$ 19.60	\$ 26.50	16.60	1.60	4.56%	37.36%	1.70%	7.08%
Southwest Gas Holdings, Inc.	SWX	6.25	2.65	57.60%	61.15	2.89%	57.00	65.00	4.43%	\$ 81.60	\$ 45.70	\$ 63.65	48.25	1.32	5.84%	24.19%	1.41%	7.30%
Spirite Inc.	SR	5.15	3.00	41.75%	72.00	2.89%	52.00	55.00	1.87%	\$ 88.00	\$ 57.40	\$ 72.70	50.50	1.44	2.69%	30.54%	0.82%	3.81%
																	Average	5.76%

Notes:  
[1] Source: Value Line  
[2] Source: Value Line  
[3] Equals 1 - [2] / [1]  
[4] Source: Value Line  
[5] Equals [1] / [4]  
[6] Equals [5] x [5]  
[7] Source: Value Line  
[8] Source: Value Line  
[9] Equals [6] / [7] - 0.33 - 1  
[10] Source: Value Line  
[11] Source: Value Line  
[12] Equals Average ([10], [11])  
[13] Source: Value Line  
[14] Equals [12] / [13]  
[15] Equals [9] x [14]  
[16] Equals 1 - (1 / [14])  
[17] Equals [15] x [16]  
[18] Equals [6] + [17]

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 20200051-GU**  
**DOCKET NO. 20200166-GU**  
**EXHIBIT NO. (DWD-1)**  
**WITNESS: D'ASCENDIS**  
**DOCUMENT NO. 4**  
**PAGE 1 OF 14**  
**FILED: 09/21/2020**

Ex-Ante Market Risk Premium  
Market DCF Method Based - Bloomberg

[1]	[2]	[3]
S&P 500	Current 30-Year	
Est. Required	Treasury (30-	Implied Market
Market Return	day average)	Risk Premium
13.78%	1.32%	12.46%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	31,029.78	0.10%	0.72%	8.15%	8.90%	0.0093%
American Airlines Group Inc	AAL	6,636.73	0.02%	0.92%	-16.94%	-16.10%	-0.0036%
Advance Auto Parts Inc	AAP	10,807.08	0.04%	0.59%	12.11%	12.73%	0.0046%
Apple Inc	AAPL	2,206,911.25	7.41%	0.60%	8.33%	8.96%	0.6634%
AbbVie Inc	ABBV	169,018.08	0.57%	5.12%	2.05%	7.21%	0.0409%
AmerisourceBergen Corp	ABC	19,807.88	0.07%	1.73%	5.54%	7.32%	0.0049%
ABIOMED Inc	ABMD	13,857.44	0.05%	0.00%	16.00%	16.00%	0.0074%
Abbott Laboratories	ABT	193,819.92	0.65%	1.32%	8.39%	9.77%	0.0635%
Accenture PLC	ACN	152,872.90	0.51%	1.31%	10.10%	11.47%	0.0589%
Adobe Inc	ADBE	246,255.34	0.83%	0.00%	16.35%	16.35%	0.1351%
Analog Devices Inc	ADI	43,148.15	0.14%	2.05%	12.15%	14.33%	0.0207%
Archer-Daniels-Midland Co	ADM	24,870.75	0.08%	3.22%	7.20%	10.53%	0.0088%
Automatic Data Processing Inc	ADP	59,803.89	0.20%	2.68%	12.30%	15.14%	0.0304%
Autodesk Inc	ADSK	53,856.63	0.18%	0.00%	27.90%	27.90%	0.0504%
Ameren Corp	AEE	19,519.38	0.07%	2.55%	7.02%	9.65%	0.0063%
American Electric Power Co Inc	AEP	39,111.93	0.13%	3.58%	6.34%	10.04%	0.0132%
AES Corp/The	AES	11,806.08	0.04%	3.26%	7.21%	10.58%	0.0042%
Aflac Inc	AFL	25,892.98	N/A	3.11%	N/A	N/A	N/A
American International Group Inc	AIG	25,102.18	0.08%	4.42%	13.57%	18.28%	0.0154%
Apartment Investment and Management Co	AIV	5,363.61	0.02%	4.55%	0.45%	5.01%	0.0009%
Assurant Inc	AIZ	7,250.82	0.02%	2.12%	36.60%	39.11%	0.0095%
Arthur J Gallagher & Co	AJG	20,161.69	0.07%	1.71%	9.21%	10.99%	0.0074%
Akamai Technologies Inc	AKAM	18,943.73	0.06%	0.00%	11.87%	11.87%	0.0075%
Albemarle Corp	ALB	9,679.64	0.03%	1.67%	8.98%	10.73%	0.0035%
Align Technology Inc	ALGN	23,398.07	0.08%	0.00%	13.93%	13.93%	0.0109%
Alaska Air Group Inc	ALK	4,815.77	N/A	0.73%	N/A	N/A	N/A
Allstate Corp/The	ALL	29,045.40	0.10%	2.32%	7.33%	9.74%	0.0095%
Allegion plc	ALLE	9,536.01	0.03%	1.05%	5.59%	6.67%	0.0021%
Alexion Pharmaceuticals Inc	ALXN	25,033.94	0.08%	0.00%	12.37%	12.37%	0.0104%
Applied Materials Inc	AMAT	56,258.22	0.19%	1.39%	14.10%	15.59%	0.0294%
Amcor PLC	AMCR	17,347.41	0.06%	4.29%	6.99%	11.43%	0.0067%
Advanced Micro Devices Inc	AMD	106,627.83	0.36%	0.00%	27.35%	27.35%	0.0979%
AMETEK Inc	AME	23,123.78	0.08%	0.66%	9.13%	9.82%	0.0076%
Amgen Inc	AMGN	148,367.95	0.50%	2.52%	7.67%	10.29%	0.0512%
Ameriprise Financial Inc	AMP	18,858.16	N/A	2.62%	N/A	N/A	N/A
American Tower Corp	AMT	110,515.62	0.37%	1.80%	15.32%	17.26%	0.0640%
Amazon.com Inc	AMZN	1,728,550.15	5.80%	0.00%	32.26%	32.26%	1.8711%
Arista Networks Inc	ANET	16,987.92	0.06%	0.00%	8.37%	8.37%	0.0048%
ANSYS Inc	ANSS	29,083.41	0.10%	0.00%	10.90%	10.90%	0.0106%
Anthem Inc	ANTM	70,804.10	0.24%	1.35%	12.57%	14.00%	0.0333%
Aon PLC	AON	46,327.75	0.16%	0.89%	10.00%	10.93%	0.0170%
A O Smith Corp	AOS	7,904.41	N/A	1.98%	N/A	N/A	N/A
Apache Corp	APA	5,586.39	0.02%	1.84%	-29.29%	-27.72%	-0.0052%
Air Products and Chemicals Inc	APD	64,558.59	0.22%	1.74%	10.21%	12.04%	0.0261%
Amphenol Corp	APH	32,761.78	0.11%	0.91%	8.08%	9.03%	0.0099%
Aptiv PLC	APTIV	23,254.59	0.08%	0.21%	10.94%	11.16%	0.0087%
Alexandria Real Estate Equities Inc	ARE	21,235.17	0.07%	2.51%	4.99%	7.56%	0.0054%
Atmos Energy Corp	ATO	12,313.29	0.04%	2.31%	7.37%	9.77%	0.0040%
Activision Blizzard Inc	ATVI	64,466.75	0.22%	0.47%	12.03%	12.53%	0.0271%
AvalonBay Communities Inc	AVB	22,245.93	0.07%	4.01%	3.98%	8.07%	0.0060%
Broadcom Inc	AVGO	139,618.62	0.47%	3.74%	9.05%	12.96%	0.0607%
Avery Dennison Corp	AVY	9,630.70	0.03%	1.99%	4.55%	6.59%	0.0021%
American Water Works Co Inc	AWK	25,611.38	0.09%	1.53%	8.19%	9.78%	0.0084%
American Express Co	AXP	81,796.32	0.27%	1.70%	4.37%	6.11%	0.0168%
AutoZone Inc	AZO	27,945.06	0.09%	0.00%	7.75%	7.75%	0.0073%
Boeing Co/The	BA	96,983.58	N/A	1.19%	N/A	N/A	N/A
Bank of America Corp	BAC	223,013.88	0.75%	2.81%	12.70%	15.69%	0.1174%
Baxter International Inc	BAX	44,077.60	0.15%	1.14%	10.98%	12.18%	0.0180%
Best Buy Co Inc	BBY	28,707.07	0.10%	1.84%	8.26%	10.17%	0.0098%
Becton Dickinson and Co	BDX	70,371.39	0.24%	1.46%	8.73%	10.25%	0.0242%
Franklin Resources Inc	BEN	10,432.21	0.04%	5.10%	-2.69%	2.35%	0.0008%
Brown-Forman Corp	BF/B	33,873.73	0.11%	0.97%	7.53%	8.54%	0.0097%
Biogen Inc	BIIB	45,537.29	0.15%	0.00%	1.55%	1.55%	0.0024%
Bio-Rad Laboratories Inc	BIO	15,150.44	0.05%	0.00%	21.75%	21.75%	0.0111%
Bank of New York Mellon Corp/The	BK	32,759.17	0.11%	3.35%	4.75%	8.18%	0.0090%
Booking Holdings Inc	BKNG	78,230.31	0.26%	0.00%	10.08%	10.08%	0.0264%
Baker Hughes Co	BKR	14,761.99	0.05%	5.08%	21.91%	27.54%	0.0136%

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 20200051-GU**  
**DOCKET NO. 20200166-GU**  
**EXHIBIT NO. (DWD-1)**  
**WITNESS: D'ASCENDIS**  
**DOCUMENT NO. 4**  
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**FILED: 09/21/2020**

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
BlackRock Inc	BLK	91,178.58	0.31%	2.40%	7.13%	9.62%	0.0294%
Ball Corp	BLL	26,246.29	0.09%	0.73%	6.07%	6.82%	0.0060%
Bristol-Myers Squibb Co	BMJ	140,194.73	0.47%	2.89%	10.65%	13.70%	0.0644%
Broadridge Financial Solutions Inc	BR	15,823.19	0.05%	1.63%	7.40%	9.09%	0.0048%
Berkshire Hathaway Inc	BRK/B	521,055.45	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	58,686.27	0.20%	0.00%	1.15%	1.15%	0.0023%
BorgWarner Inc	BWA	8,412.45	0.03%	1.68%	7.01%	8.75%	0.0025%
Boston Properties Inc	BXP	13,519.91	0.05%	4.52%	4.23%	8.84%	0.0040%
Citigroup Inc	C	106,424.93	0.36%	4.01%	3.17%	7.24%	0.0259%
Conagra Brands Inc	CAG	18,738.10	0.06%	2.23%	7.90%	10.22%	0.0064%
Cardinal Health Inc	CAH	14,844.46	0.05%	3.91%	3.46%	7.44%	0.0037%
Carrier Global Corp	CARR	25,855.02	0.09%	0.41%	5.10%	5.52%	0.0048%
Caterpillar Inc	CAT	77,061.80	0.26%	2.95%	5.00%	8.03%	0.0208%
Chubb Ltd	CB	56,420.74	0.19%	2.47%	9.37%	11.95%	0.0226%
Boe Global Markets Inc	CBOE	9,982.89	0.03%	1.64%	6.40%	8.09%	0.0027%
CBRE Group Inc	CBRE	15,768.11	0.05%	0.00%	11.00%	11.00%	0.0058%
Crown Castle International Corp	CCI	68,510.85	0.23%	2.99%	17.43%	20.68%	0.0475%
Carnival Corp	CCL	13,653.56	0.05%	3.59%	-13.10%	-9.75%	-0.0045%
Cadence Design Systems Inc	CDNS	30,921.04	0.10%	0.00%	10.89%	10.89%	0.0113%
CDW Corp/DE	CDW	16,214.41	0.05%	1.36%	13.10%	14.55%	0.0079%
Celanese Corp	CE	11,965.10	0.04%	2.48%	4.05%	6.58%	0.0026%
Cerner Corp	CERN	22,405.84	0.08%	1.03%	11.76%	12.86%	0.0097%
CF Industries Holdings Inc	CF	6,978.90	0.02%	3.68%	7.33%	11.15%	0.0026%
Citizens Financial Group Inc	CFG	11,042.06	0.04%	6.00%	-14.75%	-9.19%	-0.0034%
Church & Dwight Co Inc	CHD	23,699.90	0.08%	1.00%	8.79%	9.84%	0.0078%
CH Robinson Worldwide Inc	CHRW	13,253.14	0.04%	2.10%	8.63%	10.82%	0.0048%
Charter Communications Inc	CHTR	145,629.35	0.49%	0.02%	40.95%	40.97%	0.2002%
Cigna Corp	CI	65,130.38	0.22%	0.04%	11.06%	11.10%	0.0243%
Cincinnati Financial Corp	CINF	12,773.38	N/A	2.98%	N/A	N/A	N/A
Colgate-Palmolive Co	CL	67,957.54	0.23%	2.26%	5.99%	8.32%	0.0190%
Clorox Co/The	CLX	28,208.73	0.09%	1.98%	5.92%	7.95%	0.0075%
Comerica Inc	CMA	5,496.23	0.02%	6.88%	14.75%	22.14%	0.0041%
Comcast Corp	CMCSA	204,696.59	0.69%	2.04%	10.55%	12.70%	0.0872%
CME Group Inc	CME	63,071.71	0.21%	3.58%	7.16%	10.86%	0.0230%
Chipotle Mexican Grill Inc	CMG	36,645.42	0.12%	0.00%	23.19%	23.19%	0.0285%
Cummins Inc	CMJ	30,605.75	0.10%	2.57%	3.92%	6.54%	0.0067%
CMS Energy Corp	CMS	17,317.12	0.06%	2.70%	7.08%	9.87%	0.0057%
Centene Corp	CNC	35,533.07	0.12%	0.00%	13.23%	13.23%	0.0158%
CenterPoint Energy Inc	CNP	10,934.52	0.04%	3.39%	-1.25%	2.12%	0.0008%
Capital One Financial Corp	COF	31,521.57	0.11%	1.39%	1.65%	3.05%	0.0032%
Cabot Oil & Gas Corp	COG	7,561.06	0.03%	2.11%	9.05%	11.26%	0.0029%
Cooper Cos Inc/The	COO	16,766.86	0.06%	0.02%	8.45%	8.47%	0.0048%
ConocoPhillips	COP	40,639.53	0.14%	4.46%	-16.00%	-11.90%	-0.0162%
Costco Wholesale Corp	COST	153,500.13	0.52%	0.78%	6.87%	7.68%	0.0395%
Coty Inc	COTY	2,738.99	0.01%	5.06%	-3.56%	1.41%	0.0001%
Campbell Soup Co	CPB	15,896.87	0.05%	2.69%	8.89%	11.70%	0.0062%
Copart Inc	CPRT	24,257.21	N/A	0.00%	N/A	N/A	N/A
salesforce.com Inc	CRM	248,111.50	0.83%	0.00%	19.08%	19.08%	0.1588%
Cisco Systems Inc	CSCO	178,265.35	0.60%	3.53%	4.25%	7.85%	0.0470%
CSX Corp	CSX	58,495.92	0.20%	1.43%	6.21%	7.69%	0.0151%
Cintas Corp	CTAS	34,490.01	0.12%	0.81%	9.69%	10.54%	0.0122%
CenturyLink Inc	CTL	11,798.53	0.04%	9.32%	-0.23%	9.08%	0.0036%
Cognizant Technology Solutions Corp	CTSH	36,254.22	0.12%	1.30%	10.15%	11.52%	0.0140%
Corteva Inc	CTVA	21,369.25	0.07%	1.72%	8.22%	10.00%	0.0072%
Citrix Systems Inc	CTXS	17,936.84	0.06%	0.96%	9.63%	10.64%	0.0064%
CVS Health Corp	CVS	81,296.66	0.27%	3.22%	6.22%	9.54%	0.0260%
Chevron Corp	CVX	156,721.52	N/A	6.15%	N/A	N/A	N/A
Concho Resources Inc	CXO	10,224.85	0.03%	1.54%	14.20%	15.85%	0.0054%
Dominion Energy Inc	D	65,900.26	0.22%	4.40%	1.68%	6.12%	0.0135%
Delta Air Lines Inc	DAL	19,677.88	0.07%	1.30%	-7.67%	-6.42%	-0.0042%
DuPont de Nemours Inc	DD	40,918.23	0.14%	2.15%	2.56%	4.74%	0.0065%
Deere & Co	DE	65,827.50	0.22%	1.38%	6.18%	7.60%	0.0168%
Discover Financial Services	DFS	16,264.83	0.05%	3.30%	0.26%	3.57%	0.0019%
Dollar General Corp	DG	50,274.92	0.17%	0.72%	11.22%	11.98%	0.0202%
Quest Diagnostics Inc	DGX	14,939.82	0.05%	1.99%	12.66%	14.78%	0.0074%
DR Horton Inc	DHI	25,957.45	0.09%	0.98%	14.42%	15.47%	0.0135%
Danaher Corp	DHR	146,471.64	0.49%	0.36%	10.96%	11.33%	0.0557%
Walt Disney Co/The	DIS	238,297.45	0.80%	0.72%	4.50%	5.23%	0.0418%
Discovery Inc	DISCA	14,985.38	0.05%	0.00%	4.03%	4.03%	0.0020%
DISH Network Corp	DISH	18,065.25	0.06%	0.00%	2.64%	2.64%	0.0016%
Digital Realty Trust Inc	DLR	18,658.84	0.06%	0.00%	2.64%	2.64%	0.0016%
Dollar Tree Inc	DLTR	43,187.92	0.14%	2.89%	13.63%	16.71%	0.0242%
Dover Corp	DOV	22,845.61	0.08%	0.00%	8.95%	8.95%	0.0069%
Dow Inc	DOW	15,813.68	0.05%	1.80%	10.47%	12.36%	0.0066%
Dominos Pizza Inc	DPZ	33,439.40	0.11%	6.29%	1.60%	7.93%	0.0089%
Duke Realty Corp	DRE	16,091.44	0.05%	0.76%	13.89%	14.71%	0.0079%
Darden Restaurants Inc	DRI	14,285.16	0.05%	2.46%	4.46%	6.97%	0.0033%
DTE Energy Co	DTE	11,274.09	0.04%	1.62%	17.66%	19.42%	0.0073%

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Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Duke Energy Corp	DUK	22,797.11	0.08%	3.43%	6.00%	9.53%	0.0073%
DaVita Inc	DVA	59,084.62	0.20%	4.83%	4.14%	9.06%	0.0180%
Devon Energy Corp	DVN	10,584.72	0.04%	0.00%	10.40%	10.40%	0.0037%
DXC Technology Co	DXC	4,161.04	0.01%	3.95%	3.05%	7.06%	0.0010%
DexCom Inc	DXCM	5,078.81	0.02%	2.05%	-23.03%	-21.21%	-0.0036%
Electronic Arts Inc	EA	40,729.69	0.14%	0.00%	32.12%	32.12%	0.0439%
eBay Inc	EBAY	40,278.49	0.14%	0.00%	6.48%	6.48%	0.0088%
Ecolab Inc	ECL	38,339.49	0.13%	1.16%	14.97%	16.22%	0.0209%
Consolidated Edison Inc	ED	56,243.63	0.19%	0.96%	12.27%	13.29%	0.0251%
Equifax Inc	EFX	23,862.99	0.08%	4.29%	3.35%	7.71%	0.0062%
Edison International	EIX	20,437.65	0.07%	0.93%	9.73%	10.70%	0.0073%
Estee Lauder Cos Inc/The	EL	19,849.04	0.07%	4.85%	4.07%	9.02%	0.0060%
Eastman Chemical Co	EMN	79,997.61	0.27%	0.83%	23.54%	24.47%	0.0657%
Emerson Electric Co	EMR	9,895.42	0.03%	3.59%	2.70%	6.33%	0.0021%
EOG Resources Inc	EOG	41,514.71	0.14%	2.86%	8.40%	11.38%	0.0159%
Equinix Inc	EQIX	26,398.92	0.09%	3.20%	8.25%	11.58%	0.0103%
Equity Residential	EQR	69,940.64	0.23%	1.34%	17.90%	19.36%	0.0454%
Eversource Energy	ES	21,011.26	0.07%	4.25%	2.69%	6.99%	0.0049%
Essex Property Trust Inc	ESS	29,370.06	0.10%	2.65%	7.63%	10.38%	0.0102%
E*TRADE Financial Corp	ETFC	14,118.61	0.05%	3.82%	2.00%	5.86%	0.0028%
Eaton Corp PLC	ETN	11,961.31	0.04%	1.05%	-9.64%	-8.64%	-0.0035%
Entergy Corp	ETR	40,850.21	0.14%	2.88%	10.03%	13.05%	0.0179%
Evergy Inc	EVRG	19,848.95	0.07%	3.78%	4.27%	8.13%	0.0054%
Edwards Lifesciences Corp	EW	12,062.79	0.04%	3.85%	6.41%	10.39%	0.0042%
Exelon Corp	EXC	53,370.21	0.18%	0.00%	13.33%	13.33%	0.0239%
Expeditors International of Washington I	EXPD	35,947.75	0.12%	4.13%	0.97%	5.11%	0.0062%
Expedia Group Inc	EXPE	14,819.40	0.05%	1.18%	6.50%	7.72%	0.0038%
Extra Space Storage Inc	EXR	13,861.40	0.05%	0.39%	10.17%	10.58%	0.0049%
Ford Motor Co	F	13,752.40	0.05%	3.38%	1.34%	4.74%	0.0022%
Diamondback Energy Inc	FANG	27,132.61	0.09%	1.60%	12.74%	14.44%	0.0131%
Fastenal Co	FAST	6,148.83	0.02%	3.85%	17.84%	22.03%	0.0045%
Facebook Inc	FB	28,027.38	0.09%	2.03%	14.50%	16.67%	0.0157%
Fortune Brands Home & Security Inc	FBHS	835,272.80	2.80%	0.00%	23.25%	23.25%	0.6516%
Freepart-McMoRan Inc	FCX	11,615.51	0.04%	1.14%	9.01%	10.20%	0.0040%
FedEx Corp	FDX	22,669.13	0.08%	0.58%	139.01%	139.99%	0.1065%
FirstEnergy Corp	FE	57,597.51	0.19%	1.21%	12.88%	14.16%	0.0274%
F5 Networks Inc	FFIV	15,498.94	0.05%	5.45%	5.00%	10.59%	0.0055%
Fidelity National Information Services I	FIS	8,095.04	0.03%	0.00%	11.50%	11.50%	0.0031%
Fiserv Inc	FISV	93,467.19	0.31%	0.95%	15.68%	16.70%	0.0524%
Fifth Third Bancorp	FITB	66,683.74	0.22%	0.00%	15.89%	15.89%	0.0355%
FLIR Systems Inc	FLIR	14,714.90	0.05%	5.26%	2.45%	7.77%	0.0038%
Flowserve Corp	FLS	4,838.40	0.02%	1.90%	9.50%	11.49%	0.0019%
FleetCor Technologies Inc	FLT	3,863.14	0.01%	2.70%	2.08%	4.81%	0.0006%
FMC Corp	FMC	21,134.86	0.07%	0.00%	12.49%	12.49%	0.0089%
Fox Corp	FOXA	13,845.46	0.05%	1.72%	9.55%	11.36%	0.0053%
First Republic Bank/CA	FRC	19,427.44	0.07%	0.70%	7.85%	8.57%	0.0056%
Federal Realty Investment Trust	FRT	16,832.79	0.06%	1.85%	-0.71%	1.14%	0.0006%
TechnipFMC PLC	FTI	19,340.08	0.06%	0.70%	7.85%	8.58%	0.0056%
Fortinet Inc	FTNT	5,993.62	0.02%	5.24%	2.86%	8.17%	0.0016%
Fortive Corp	FTV	3,459.86	0.01%	1.87%	3.00%	4.90%	0.0006%
General Dynamics Corp	GD	21,362.58	0.07%	0.00%	14.83%	14.83%	0.0106%
General Electric Co	GE	24,306.23	0.08%	0.38%	8.69%	9.08%	0.0074%
Gilead Sciences Inc	GILD	42,853.36	0.14%	2.92%	4.40%	7.37%	0.0106%
General Mills Inc	GIS	55,495.85	0.19%	0.63%	5.53%	6.18%	0.0115%
Globe Life Inc	GL	83,686.10	0.28%	4.00%	8.43%	12.60%	0.0354%
Corning Inc	GLW	39,068.20	0.13%	3.09%	5.53%	8.71%	0.0114%
General Motors Co	GM	8,785.17	N/A	0.90%	N/A	N/A	N/A
Alphabet Inc	GOOGL	24,727.26	0.08%	2.74%	5.97%	8.79%	0.0073%
Genuine Parts Co	GPC	42,403.39	0.14%	1.51%	12.76%	14.36%	0.0204%
Global Payments Inc	GPN	53,331.14	0.18%	0.39%	17.97%	18.39%	0.0329%
Gap Inc/The	GPS	1,110,005.53	3.72%	0.00%	15.77%	15.77%	0.5874%
Garmin Ltd	GRMN	13,624.31	0.05%	3.32%	1.96%	5.31%	0.0024%
Goldman Sachs Group Inc/The	GS	52,852.35	0.18%	0.39%	17.97%	18.40%	0.0326%
WW Grainger Inc	GWW	6,494.66	0.02%	1.25%	4.47%	5.75%	0.0013%
Halliburton Co	HAL	19,814.11	0.07%	2.30%	5.85%	8.22%	0.0055%
Hasbro Inc	HAS	73,443.44	0.25%	2.44%	5.90%	8.41%	0.0207%
Huntington Bancshares Inc/OH	HBAN	19,576.72	0.07%	1.64%	6.30%	7.99%	0.0052%
Hanesbrands Inc	HBI	14,213.65	0.05%	2.01%	12.95%	15.09%	0.0072%
HCA Healthcare Inc	HCA	10,816.57	0.04%	3.50%	9.53%	13.19%	0.0048%
Home Depot Inc/The	HD	9,572.88	0.03%	6.40%	-2.94%	3.36%	0.0011%
Hess Corp	HES	5,323.38	0.02%	3.92%	3.04%	7.02%	0.0013%
HollyFrontier Corp	HFC	45,877.88	0.15%	0.27%	10.08%	10.36%	0.0160%
Hartford Financial Services Group Inc/Th	HIG	306,832.88	1.03%	2.10%	8.53%	10.72%	0.1103%
Huntington Ingalls Industries Inc	HII	14,140.93	0.05%	2.19%	103.20%	106.52%	0.0505%
Hilton Worldwide Holdings Inc	HLT	3,867.31	0.01%	5.87%	-2.42%	3.38%	0.0004%
Hologic Inc	HOLX	14,489.04	0.05%	3.24%	9.50%	12.89%	0.0063%
Honeywell International Inc	HON	6,135.37	0.02%	2.80%	40.00%	43.35%	0.0089%
Hewlett Packard Enterprise Co	HPE	25,057.67	0.08%	0.17%	5.60%	5.77%	0.0049%



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EXHIBIT NO. (DWD-1)  
WITNESS: D'ASCENDIS  
DOCUMENT NO. 4  
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Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
HP Inc	HPQ	15,466.60	0.05%	0.00%	15.97%	15.97%	0.0083%
H&R Block Inc	HRB	116,180.20	0.39%	2.12%	6.98%	9.18%	0.0358%
Hormel Foods Corp	HRL	12,435.62	0.04%	4.97%	0.78%	5.77%	0.0024%
Henry Schein Inc	HSIC	27,955.66	0.09%	3.61%	5.19%	8.88%	0.0083%
Host Hotels & Resorts Inc	HST	2,796.37	0.01%	7.02%	10.00%	17.37%	0.0016%
Hershey Co/The	HSY	27,475.76	0.09%	1.81%	3.75%	5.59%	0.0052%
Humana Inc	HUM	9,485.49	0.03%	0.00%	2.88%	2.88%	0.0009%
Howmet Aerospace Inc	HWM	7,920.11	0.03%	2.17%	5.00%	7.23%	0.0019%
International Business Machines Corp	IBM	30,920.46	0.10%	2.12%	7.40%	9.60%	0.0100%
Intercontinental Exchange Inc	ICE	54,923.90	0.18%	0.59%	11.99%	12.62%	0.0233%
IDEXX Laboratories Inc	IDXX	7,641.20	0.03%	0.11%	39.00%	39.14%	0.0100%
IDEX Corp	IEX	109,817.27	0.37%	5.31%	1.43%	6.78%	0.0250%
International Flavors & Fragrances Inc	IFF	57,683.77	0.19%	1.13%	9.26%	10.44%	0.0202%
Illumina Inc	ILMN	33,261.48	0.11%	0.00%	13.21%	13.21%	0.0147%
Incyte Corp	INCY	13,609.24	0.05%	1.14%	11.93%	13.14%	0.0060%
IHS Markit Ltd	INFO	13,237.18	0.04%	2.40%	7.20%	9.68%	0.0043%
Intel Corp	INTC	52,154.12	0.18%	0.00%	9.97%	9.97%	0.0174%
Intuit Inc	INTU	21,071.66	0.07%	0.00%	31.30%	31.30%	0.0221%
International Paper Co	IP	31,713.03	0.11%	0.74%	12.18%	12.96%	0.0138%
Interpublic Group of Cos Inc/The	IPG	216,690.35	0.73%	2.59%	6.62%	9.29%	0.0676%
IPG Photonics Corp	IPGP	90,425.59	0.30%	0.69%	13.44%	14.17%	0.0430%
IQVIA Holdings Inc	IQV	14,257.48	0.05%	5.64%	5.15%	10.93%	0.0052%
Ingersoll Rand Inc	IR	6,925.03	0.02%	5.68%	-0.10%	5.58%	0.0013%
Iron Mountain Inc	IRM	8,613.25	0.03%	0.00%	19.73%	19.73%	0.0057%
Intuitive Surgical Inc	ISRG	31,320.62	0.11%	0.00%	11.75%	11.75%	0.0123%
Gartner Inc	IT	14,622.09	0.05%	0.00%	11.20%	11.20%	0.0055%
Illinois Tool Works Inc	ITW	8,670.38	0.03%	8.25%	0.06%	8.31%	0.0024%
Invesco Ltd	IVZ	85,527.19	0.29%	0.00%	7.88%	7.88%	0.0226%
Jacobs Engineering Group Inc	J	11,584.18	0.04%	0.00%	12.50%	12.50%	0.0049%
JB Hunt Transport Services Inc	JBHT	62,458.05	0.21%	2.15%	6.30%	8.52%	0.0179%
Johnson Controls International plc	JCI	4,683.49	0.02%	7.38%	-21.13%	-14.53%	-0.0023%
Jack Henry & Associates Inc	JKHY	11,753.88	0.04%	0.80%	8.06%	8.89%	0.0035%
Johnson & Johnson	JNJ	14,827.99	0.05%	0.77%	13.30%	14.12%	0.0070%
Juniper Networks Inc	JNPR	30,305.06	0.10%	2.70%	9.50%	12.32%	0.0125%
JPMorgan Chase & Co	JPM	12,678.09	0.04%	1.04%	10.43%	11.52%	0.0049%
Kellogg Co	K	403,901.45	1.36%	2.59%	5.40%	8.05%	0.1091%
KeyCorp	KEY	8,293.76	0.03%	3.18%	7.83%	11.14%	0.0031%
Keysight Technologies Inc	KEYS	305,339.49	1.02%	3.60%	5.40%	9.10%	0.0932%
Kraft Heinz Co/The	KHC	24,316.41	0.08%	3.26%	4.15%	7.47%	0.0061%
Kimco Realty Corp	KIM	12,024.32	0.04%	6.02%	4.80%	10.97%	0.0044%
KLA Corp	KLAC	18,472.50	0.06%	0.00%	7.52%	7.52%	0.0047%
Kimberly-Clark Corp	KMB	42,839.15	0.14%	4.57%	4.30%	8.96%	0.0129%
Kinder Morgan Inc	KMI	5,185.72	0.02%	5.44%	2.08%	7.58%	0.0013%
CarMax Inc	KMX	31,891.36	0.11%	1.80%	9.12%	11.01%	0.0118%
Coca-Cola Co/The	KO	53,803.60	0.18%	2.69%	4.95%	7.71%	0.0139%
Kroger Co/The	KR	31,282.06	0.10%	7.63%	6.35%	14.22%	0.0149%
Kohl's Corp	KSS	17,437.91	0.06%	0.00%	9.93%	9.93%	0.0058%
Kansas City Southern	KSU	212,753.09	0.71%	3.31%	2.19%	5.54%	0.0395%
Loews Corp	L	27,756.39	0.09%	1.88%	5.58%	7.51%	0.0070%
L Brands Inc	LB	3,369.26	0.01%	3.28%	1.25%	4.55%	0.0005%
Leidos Holdings Inc	LDOS	17,175.34	0.06%	0.87%	10.10%	11.01%	0.0063%
Leggett & Platt Inc	LEG	10,056.73	N/A	0.00%	N/A	N/A	N/A
Lennar Corp	LEN	8,168.18	0.03%	1.66%	11.50%	13.26%	0.0036%
Laboratory Corp of America Holdings	LH	12,867.09	0.04%	1.53%	10.71%	12.32%	0.0053%
L3Harris Technologies Inc	LHX	5,428.11	0.02%	3.90%	8.00%	12.06%	0.0022%
Linde PLC	LIN	22,778.00	0.08%	0.47%	10.59%	11.09%	0.0085%
LKQ Corp	LKQ	17,118.05	0.06%	0.00%	6.30%	6.30%	0.0036%
Eli Lilly and Co	LLY	39,075.16	0.13%	1.88%	17.64%	19.68%	0.0258%
Lockheed Martin Corp	LMT	131,247.54	0.44%	1.51%	10.43%	12.02%	0.0530%
Lincoln National Corp	LNC	9,658.25	0.03%	0.00%	7.90%	7.90%	0.0026%
Alliant Energy Corp	LNT	141,930.64	0.48%	2.00%	16.25%	18.41%	0.0877%
Lowe's Cos Inc	LOW	109,094.08	0.37%	2.53%	7.32%	9.94%	0.0364%
Lam Research Corp	LRCX	6,966.59	0.02%	4.49%	9.00%	13.69%	0.0032%
Southwest Airlines Co	LUV	13,518.24	0.05%	2.80%	5.59%	8.47%	0.0038%
Las Vegas Sands Corp	LVS	124,462.17	0.42%	1.39%	16.98%	18.48%	0.0772%
Lamb Weston Holdings Inc	LW	48,979.59	0.16%	1.49%	13.41%	14.99%	0.0246%
LyondellBasell Industries NV	LYB	22,167.39	0.07%	0.73%	-8.47%	-7.77%	-0.0058%
Live Nation Entertainment Inc	LYV	38,732.47	0.13%	2.00%	8.40%	10.49%	0.0136%
Mastercard Inc	MA	9,132.95	0.03%	1.49%	9.13%	10.69%	0.0033%
Mid-America Apartment Communities Inc	MAA	21,859.80	0.07%	6.41%	6.75%	13.38%	0.0098%
Marriott International Inc/MD	MAR	12,340.07	N/A	0.00%	N/A	N/A	N/A
Masco Corp	MAS	358,570.00	1.20%	0.43%	20.14%	20.61%	0.2480%
McDonald's Corp	MCD	13,394.45	N/A	3.42%	N/A	N/A	N/A
Microchip Technology Inc	MCHP	33,375.26	0.11%	0.47%	2.04%	2.52%	0.0028%
McKesson Corp	MCK	15,247.32	0.05%	0.94%	11.94%	12.94%	0.0066%
Moody's Corp	MCO	158,880.77	0.53%	2.37%	7.36%	9.82%	0.0523%
Mondelez International Inc	MDLZ	27,693.93	0.09%	1.34%	13.33%	14.76%	0.0137%
Medtronic PLC	MDT	24,886.40	0.08%	1.13%	8.77%	9.95%	0.0083%

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MetLife Inc	MET	55,303.93	0.19%	0.75%	9.80%	10.59%	0.0196%
MGM Resorts International	MGM	83,443.53	0.28%	2.06%	9.70%	11.86%	0.0332%
Mohawk Industries Inc	MHK	144,363.59	0.48%	2.10%	7.63%	9.80%	0.0475%
McCormick & Co Inc/MD	MKC	34,908.70	0.12%	4.72%	4.94%	9.78%	0.0115%
MarketAxess Holdings Inc	MKTX	11,098.83	0.04%	0.74%	8.00%	8.77%	0.0033%
Martin Marietta Materials Inc	MLM	6,573.44	0.02%	0.00%	6.70%	6.70%	0.0015%
Marsh & McLennan Cos Inc	MMC	27,452.90	0.09%	1.18%	10.13%	11.36%	0.0105%
3M Co	MMM	18,451.98	N/A	0.49%	N/A	N/A	N/A
Monster Beverage Corp	MNST	12,632.48	0.04%	1.10%	8.88%	10.04%	0.0043%
Altria Group Inc	MO	58,205.28	0.20%	1.60%	9.03%	10.70%	0.0209%
Mosaic Co/The	MOS	93,902.69	0.32%	3.62%	7.05%	10.80%	0.0340%
Marathon Petroleum Corp	MPC	44,227.47	0.15%	0.00%	12.34%	12.34%	0.0183%
Merck & Co Inc	MRK	81,286.29	0.27%	7.78%	4.45%	12.41%	0.0338%
Marathon Oil Corp	MRO	6,910.81	0.02%	1.14%	41.00%	42.37%	0.0098%
Morgan Stanley	MS	23,073.66	0.08%	6.51%	4.65%	11.31%	0.0088%
MSCI Inc	MSCI	215,668.39	0.72%	2.81%	7.78%	10.70%	0.0774%
Microsoft Corp	MSFT	4,168.24	0.01%	1.46%	0.90%	2.36%	0.0003%
Motorola Solutions Inc	MSI	82,401.53	0.28%	2.69%	10.00%	12.82%	0.0354%
M&T Bank Corp	MTB	31,219.25	0.10%	0.78%	11.75%	12.58%	0.0132%
Mettler-Toledo International Inc	MTD	1,706,732.77	5.73%	0.95%	13.96%	14.98%	0.8580%
Micron Technology Inc	MU	26,274.55	0.09%	1.64%	8.50%	10.21%	0.0090%
Maxim Integrated Products Inc	MXIM	13,246.20	0.04%	4.27%	-1.80%	2.43%	0.0011%
Mylan NV	MYL	23,270.82	0.08%	0.00%	7.41%	7.41%	0.0058%
Noble Energy Inc	NBL	50,561.54	0.17%	0.00%	8.22%	8.22%	0.0139%
Norwegian Cruise Line Holdings Ltd	NCLH	18,252.62	0.06%	2.86%	11.65%	14.68%	0.0090%
Nasdaq Inc	NDAQ	8,467.59	0.03%	0.00%	0.42%	0.42%	0.0001%
NextEra Energy Inc	NEE	4,822.83	0.02%	1.79%	11.21%	13.10%	0.0021%
Newmont Corp	NEM	4,715.84	0.02%	0.00%	-83.04%	-83.04%	-0.0131%
Netflix Inc	NFLX	22,079.62	0.07%	1.44%	9.29%	10.80%	0.0080%
NiSource Inc	NI	136,694.97	0.46%	1.99%	8.12%	10.19%	0.0467%
NIKE Inc	NKE	54,030.62	0.18%	1.42%	11.65%	13.15%	0.0238%
NortonLifeLock Inc	NLOK	233,544.14	0.78%	0.00%	32.13%	32.13%	0.2518%
Nielsen Holdings PLC	NLSN	8,487.79	0.03%	3.79%	5.23%	9.12%	0.0026%
Northrop Grumman Corp	NOC	174,535.93	0.59%	0.92%	21.98%	23.00%	0.1347%
National Oilwell Varco Inc	NOV	13,900.39	0.05%	2.02%	7.28%	9.37%	0.0044%
ServiceNow Inc	NOW	5,451.20	0.02%	1.57%	12.00%	13.66%	0.0025%
NRG Energy Inc	NRG	57,117.91	0.19%	1.65%	19.56%	21.37%	0.0410%
Norfolk Southern Corp	NSC	4,659.40	0.02%	0.86%	19.15%	20.09%	0.0031%
NetApp Inc	NTAP	92,451.44	0.31%	0.00%	29.83%	29.83%	0.0925%
Northern Trust Corp	NTRS	8,400.78	N/A	3.49%	N/A	N/A	N/A
Nucor Corp	NUE	54,218.37	0.18%	1.78%	6.04%	7.88%	0.0143%
NVIDIA Corp	NVDA	10,520.82	0.04%	4.07%	7.75%	11.97%	0.0042%
NVR Inc	NVR	17,040.71	0.06%	3.42%	2.11%	5.57%	0.0032%
Newell Brands Inc	NWL	13,724.15	0.05%	3.54%	4.85%	8.48%	0.0039%
News Corp	NWSA	330,082.66	1.11%	0.11%	18.96%	19.09%	0.2114%
Realty Income Corp	O	15,432.80	0.05%	0.00%	7.92%	7.92%	0.0041%
Old Dominion Freight Line Inc	ODFL	6,780.31	0.02%	5.78%	-4.73%	0.91%	0.0002%
ONEOK Inc	OKE	12,211.11	0.04%	13.64%	2.49%	16.29%	0.0067%
Omnicom Group Inc	OMC	8,890.01	0.03%	1.32%	11.29%	12.68%	0.0038%
Oracle Corp	ORCL	21,402.79	0.07%	4.49%	4.56%	9.15%	0.0066%
O'Reilly Automotive Inc	ORLY	23,722.07	0.08%	0.29%	9.24%	9.55%	0.0076%
Otis Worldwide Corp	OTIS	12,206.67	0.04%	13.64%	2.49%	16.30%	0.0067%
Occidental Petroleum Corp	OXY	11,622.25	0.04%	4.84%	2.30%	7.19%	0.0028%
Paycom Software Inc	PAYC	175,589.98	0.59%	1.70%	9.23%	11.01%	0.0649%
Paychex Inc	PAYX	34,486.78	0.12%	0.00%	10.58%	10.58%	0.0122%
People's United Financial Inc	PBCT	27,240.70	0.09%	1.23%	4.80%	6.06%	0.0055%
PACCAR Inc	PCAR	11,850.01	0.04%	9.13%	7.50%	16.97%	0.0067%
Healthpeak Properties Inc	PEAK	17,528.27	0.06%	0.00%	21.20%	21.20%	0.0125%
Public Service Enterprise Group Inc	PEG	27,435.12	0.09%	3.28%	6.55%	9.94%	0.0092%
PepsiCo Inc	PEP	4,494.14	0.02%	6.80%	2.00%	8.86%	0.0013%
Pfizer Inc	PFE	29,713.42	0.10%	1.61%	4.47%	6.11%	0.0061%
Principal Financial Group Inc	PFGE	14,879.15	0.05%	5.32%	2.91%	8.30%	0.0041%
Procter & Gamble Co/The	PG	26,420.67	0.09%	3.75%	3.42%	7.23%	0.0064%
Progressive Corp/The	PGR	193,931.68	0.65%	2.87%	4.81%	7.74%	0.0504%
Parker-Hannifin Corp	PH	209,994.49	0.70%	4.01%	4.90%	9.00%	0.0634%
PulteGroup Inc	PHM	11,559.98	0.04%	5.34%	6.55%	12.07%	0.0047%
Packaging Corp of America	PKG	344,389.33	1.16%	2.29%	6.67%	9.03%	0.1043%
PerkinElmer Inc	PKI	55,655.42	0.19%	2.79%	6.18%	9.06%	0.0169%
Prologis Inc	PLD	26,484.98	0.09%	1.79%	9.59%	11.46%	0.0102%
Philip Morris International Inc	PM	11,958.04	0.04%	1.06%	10.19%	11.30%	0.0045%
PNC Financial Services Group Inc/The	PNC	9,601.10	0.03%	3.12%	5.60%	8.81%	0.0028%
Pentair PLC	PNR	13,162.80	0.04%	0.20%	10.58%	10.80%	0.0048%
Pinnacle West Capital Corp	PNW	75,231.96	0.25%	2.25%	7.27%	9.60%	0.0242%
PPG Industries Inc	PPG	124,255.96	0.42%	5.90%	6.38%	12.47%	0.0520%
PPL Corp	PPL	47,204.72	0.16%	4.14%	-11.90%	-8.00%	-0.0127%
Perrigo Co PLC	PRGO	7,489.12	0.03%	1.74%	9.20%	11.02%	0.0028%
Prudential Financial Inc	PRU	8,256.05	0.03%	4.32%	4.57%	8.98%	0.0025%
Public Storage	PSA	28,411.67	0.10%	1.74%	7.93%	9.74%	0.0093%

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Phillips 66	PSX	21,241.49	0.07%	6.01%	-0.37%	5.63%	0.0040%
PVH Corp	PVH	7,137.88	0.02%	1.75%	-0.53%	1.21%	0.0003%
Quanta Services Inc	PWR	26,769.15	0.09%	6.39%	7.00%	13.62%	0.0122%
Pioneer Natural Resources Co	PXD	37,128.11	0.12%	3.77%	3.57%	7.41%	0.0092%
PayPal Holdings Inc	PYPL	25,533.65	0.09%	6.14%	3.40%	9.64%	0.0083%
QUALCOMM Inc	QCOM	3,961.14	0.01%	0.09%	2.07%	2.16%	0.0003%
Qorvo Inc	QRVO	7,073.58	0.02%	0.39%	11.00%	11.41%	0.0027%
Royal Caribbean Cruises Ltd	RCL	17,073.22	0.06%	2.06%	12.75%	14.95%	0.0086%
Everest Re Group Ltd	RE	239,517.41	0.80%	0.00%	21.27%	21.27%	0.1709%
Regency Centers Corp	REG	134,344.80	0.45%	2.14%	18.45%	20.79%	0.0937%
Regeneron Pharmaceuticals Inc	REGN	14,653.11	0.05%	0.00%	12.78%	12.78%	0.0063%
Regions Financial Corp	RF	14,777.74	0.05%	1.64%	-83.80%	-82.85%	-0.0411%
Robert Half International Inc	RHI	8,796.99	0.03%	2.85%	10.20%	13.20%	0.0039%
Raymond James Financial Inc	RJF	6,744.08	0.02%	6.01%	2.54%	8.63%	0.0020%
Ralph Lauren Corp	RL	65,955.84	0.22%	0.00%	9.58%	9.58%	0.0212%
ResMed Inc	RMD	11,099.52	0.04%	5.40%	1.86%	7.31%	0.0027%
Rockwell Automation Inc	ROK	6,098.59	0.02%	2.56%	6.57%	9.21%	0.0019%
Rollins Inc	ROL	10,385.74	0.03%	1.91%	5.00%	6.95%	0.0024%
Roper Technologies Inc	ROP	5,027.67	0.02%	1.77%	4.57%	6.38%	0.0011%
Ross Stores Inc	ROST	26,195.14	0.09%	0.91%	11.87%	12.83%	0.0113%
Republic Services Inc	RSG	26,733.86	0.09%	1.76%	7.44%	9.26%	0.0083%
Raytheon Technologies Corp	RTX	18,072.62	N/A	0.70%	N/A	N/A	N/A
SBA Communications Corp	SBAC	44,731.41	0.15%	0.47%	12.93%	13.44%	0.0202%
Starbucks Corp	SBUX	32,417.34	0.11%	0.47%	9.17%	9.66%	0.0105%
Charles Schwab Corp/The	SCHW	29,530.70	0.10%	1.79%	7.45%	9.30%	0.0092%
Sealed Air Corp	SEE	93,186.97	N/A	3.01%	N/A	N/A	N/A
Sherwin-Williams Co/The	SHW	34,261.03	0.11%	0.60%	29.00%	29.69%	0.0341%
SVB Financial Group	SIVB	98,745.43	0.33%	1.95%	13.63%	15.71%	0.0521%
J M Smucker Co/The	SJM	45,785.45	0.15%	2.02%	1.20%	3.23%	0.0050%
Schlumberger NV	SLB	6,118.09	0.02%	1.62%	4.22%	5.87%	0.0012%
SL Green Realty Corp	SLG	61,098.87	0.21%	0.81%	7.92%	8.76%	0.0180%
Snap-on Inc	SNA	13,218.71	0.04%	0.00%	10.00%	10.00%	0.0044%
Synopsys Inc	SNPS	13,709.39	0.05%	3.01%	-0.13%	2.89%	0.0013%
Southern Co/The	SO	26,387.81	0.09%	4.45%	50.00%	55.56%	0.0492%
Simon Property Group Inc	SPG	3,473.14	0.01%	7.25%	6.15%	13.63%	0.0016%
S&P Global Inc	SPGI	8,075.70	0.03%	2.90%	0.61%	3.52%	0.0010%
Sempra Energy	SRE	33,584.86	0.11%	0.00%	14.03%	14.03%	0.0158%
STERIS PLC	STE	55,154.61	0.19%	4.87%	3.00%	7.94%	0.0147%
State Street Corp	STT	20,754.99	0.07%	9.52%	0.60%	10.15%	0.0071%
Seagate Technology PLC	STX	88,307.22	0.30%	0.72%	8.90%	9.66%	0.0286%
Constellation Brands Inc	STZ	35,766.96	0.12%	3.38%	7.45%	10.96%	0.0132%
Stanley Black & Decker Inc	SWK	13,577.88	0.05%	1.00%	-4.80%	-3.82%	-0.0017%
Skyworks Solutions Inc	SWKS	23,993.78	0.08%	3.06%	6.18%	9.34%	0.0075%
Synchrony Financial	SYF	12,311.21	0.04%	5.45%	5.18%	10.77%	0.0045%
Stryker Corp	SYK	35,552.39	0.12%	1.64%	8.96%	10.67%	0.0127%
Sysco Corp	SYU	25,756.67	0.09%	1.70%	8.63%	10.39%	0.0090%
AT&T Inc	T	24,195.18	0.08%	1.25%	13.58%	14.92%	0.0121%
Molson Coors Beverage Co	TAP	14,482.96	0.05%	3.57%	-2.50%	1.03%	0.0005%
TransDigm Group Inc	TDG	74,430.05	0.25%	1.15%	8.36%	9.55%	0.0239%
Teledyne Technologies Inc	TDY	30,583.33	0.10%	2.97%	3.90%	6.92%	0.0071%
TE Connectivity Ltd	TEL	212,396.25	0.71%	6.99%	4.13%	11.26%	0.0802%
Truist Financial Corp	TFC	8,323.95	0.03%	2.01%	2.98%	5.02%	0.0014%
Teleflex Inc	TFX	27,085.25	0.09%	6.50%	5.67%	12.35%	0.0112%
Target Corp	TGT	11,560.74	N/A	0.00%	N/A	N/A	N/A
Tiffany & Co	TIF	31,881.72	0.11%	1.93%	8.78%	10.79%	0.0115%
TJX Cos Inc/The	TJX	52,300.70	0.18%	4.64%	2.17%	6.86%	0.0120%
Thermo Fisher Scientific Inc	TMO	18,278.47	0.06%	0.34%	13.00%	13.37%	0.0082%
T-Mobile US Inc	TMUS	75,698.42	0.25%	1.78%	8.72%	10.58%	0.0269%
Tapestry Inc	TPR	14,867.65	0.05%	1.57%	6.80%	8.43%	0.0042%
T Rowe Price Group Inc	TROW	65,696.56	0.22%	0.66%	9.07%	9.76%	0.0215%
Travelers Cos Inc/The	TRV	169,699.94	0.57%	0.20%	10.05%	10.26%	0.0584%
Tractor Supply Co	TSCO	144,427.55	0.48%	0.00%	19.10%	19.10%	0.0926%
Tyson Foods Inc	TSN	4,069.03	0.01%	3.36%	8.05%	11.55%	0.0016%
Trane Technologies PLC	TT	31,598.67	0.11%	2.59%	6.25%	8.92%	0.0095%
Take-Two Interactive Software Inc	TTWO	29,380.30	0.10%	2.91%	9.64%	12.70%	0.0125%
Twitter Inc	TWTR	17,297.57	0.06%	0.94%	13.18%	14.18%	0.0082%
Texas Instruments Inc	TXN	22,875.62	0.08%	2.71%	4.08%	6.84%	0.0053%
Textron Inc	TXT	28,337.14	0.10%	1.80%	4.65%	6.49%	0.0062%
Tyler Technologies Inc	TYL	19,573.65	0.07%	0.00%	8.84%	8.84%	0.0058%
Under Armour Inc	UAA	32,096.71	0.11%	0.00%	9.50%	9.50%	0.0102%
United Airlines Holdings Inc	UAL	130,201.41	0.44%	2.58%	10.00%	12.70%	0.0555%
UDR Inc	UDR	8,991.44	0.03%	0.20%	5.98%	6.19%	0.0019%
Universal Health Services Inc	UHS	13,895.55	0.05%	0.00%	13.25%	13.25%	0.0062%
Ulta Beauty Inc	ULTA	12,988.67	0.04%	0.00%	2.90%	2.90%	0.0013%
UnitedHealth Group Inc	UNH	4,219.74	N/A	0.00%	N/A	N/A	N/A
Unum Group	UNM	10,475.42	0.04%	0.00%	-0.70%	-0.70%	-0.0002%
Union Pacific Corp	UNP	10,271.28	0.03%	4.14%	4.14%	8.36%	0.0029%
United Parcel Service Inc	UPS	9,351.06	0.03%	0.40%	8.00%	8.41%	0.0026%

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 20200051-GU**  
**DOCKET NO. 20200166-GU**  
**EXHIBIT NO. (DWD-1)**  
**WITNESS: D'ASCENDIS**  
**DOCUMENT NO. 4**  
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**FILED: 09/21/2020**

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
United Rentals Inc	URI	13,077.10	0.04%	0.00%	2.90%	2.90%	0.0013%
US Bancorp	USB	297,027.44	1.00%	1.49%	12.32%	13.90%	0.1385%
Visa Inc	V	3,761.73	0.01%	6.28%	9.00%	15.57%	0.0020%
Varian Medical Systems Inc	VAR	130,635.74	0.44%	2.02%	7.57%	9.67%	0.0424%
VF Corp	VFC	141,265.50	0.47%	2.45%	9.22%	11.79%	0.0559%
ViacomCBS Inc	VIAC	12,761.81	0.04%	0.00%	-2.86%	-2.86%	-0.0012%
Valero Energy Corp	VLO	54,831.60	0.18%	4.62%	3.30%	7.99%	0.0147%
Vulcan Materials Co	VMC	411,686.10	1.38%	0.57%	14.45%	15.06%	0.2080%
Vornado Realty Trust	VNO	15,793.75	0.05%	0.00%	8.40%	8.40%	0.0045%
Verisk Analytics Inc	VRSK	25,619.40	0.09%	2.96%	8.70%	11.79%	0.0101%
VeriSign Inc	VRSN	17,297.25	0.06%	3.46%	0.06%	3.53%	0.0020%
Vertex Pharmaceuticals Inc	VRTX	21,443.96	0.07%	7.46%	4.70%	12.34%	0.0089%
Ventas Inc	VTR	15,893.78	0.05%	1.13%	15.52%	16.74%	0.0089%
Verizon Communications Inc	VZ	6,848.95	0.02%	7.88%	-4.73%	2.97%	0.0007%
Westinghouse Air Brake Technologies Corp	WAB	30,312.58	0.10%	0.58%	9.43%	10.04%	0.0102%
Waters Corp	WAT	24,670.57	0.08%	0.00%	10.30%	10.30%	0.0085%
Walgreens Boots Alliance Inc	WBA	72,701.64	0.24%	0.00%	38.61%	38.61%	0.0942%
Western Digital Corp	WDC	15,374.94	0.05%	5.47%	0.46%	5.95%	0.0031%
WEC Energy Group Inc	WEC	245,262.45	0.82%	4.19%	3.11%	7.36%	0.0606%
Welltower Inc	WELL	12,664.44	0.04%	0.73%	2.93%	3.67%	0.0016%
Wells Fargo & Co	WFC	13,392.11	0.04%	0.00%	3.13%	3.13%	0.0014%
Whirlpool Corp	WHR	32,945.63	0.11%	4.91%	-1.11%	3.77%	0.0042%
Willis Towers Watson PLC	WLTW	11,623.04	0.04%	1.43%	2.50%	3.95%	0.0015%
Waste Management Inc	WM	29,676.08	0.10%	2.69%	6.35%	9.12%	0.0091%
Williams Cos Inc/The	WMB	24,003.14	0.08%	4.77%	2.67%	7.51%	0.0060%
Walmart Inc	WMT	99,499.14	0.33%	5.10%	9.61%	14.95%	0.0499%
W R Berkley Corp	WRB	11,070.86	0.04%	2.78%	-0.42%	2.36%	0.0009%
Westrock Co	WRK	26,484.27	0.09%	1.33%	10.00%	11.40%	0.0101%
West Pharmaceutical Services Inc	WST	48,160.58	0.16%	1.91%	5.59%	7.56%	0.0122%
Western Union Co/The	WU	25,193.47	0.08%	7.71%	7.78%	15.79%	0.0133%
Weyerhaeuser Co	WY	393,216.74	1.32%	1.56%	4.33%	5.92%	0.0782%
Wynn Resorts Ltd	WYNN	11,045.14	0.04%	1.32%	9.00%	10.38%	0.0038%
Xcel Energy Inc	XEL	7,874.77	0.03%	4.27%	-6.15%	-2.00%	-0.0005%
Xilinx Inc	XLNX	20,967.80	0.07%	0.38%	14.94%	15.35%	0.0108%
Exxon Mobil Corp	XOM	9,695.58	0.03%	3.74%	5.30%	9.14%	0.0030%
DENTSPLY SIRONA Inc	XRAY	22,619.35	0.08%	1.21%	54.40%	55.94%	0.0425%
Xerox Holdings Corp	XRX	9,431.30	0.03%	1.26%	10.50%	11.83%	0.0037%
Xylem Inc/NY	XYL	36,498.16	0.12%	2.48%	6.02%	8.57%	0.0105%
Yum! Brands Inc	YUM	25,447.75	0.09%	1.46%	8.53%	10.05%	0.0086%
Zimmer Biomet Holdings Inc	ZBH	168,875.64	0.57%	8.72%	16.19%	25.62%	0.1452%
Zebra Technologies Corp	ZBRA	9,803.93	0.03%	0.85%	-0.75%	0.09%	0.0000%
Zions Bancorp NA	ZION	4,014.00	0.01%	5.34%	1.00%	6.37%	0.0009%
Zoetis Inc	ZTS	14,429.14	0.05%	1.30%	9.80%	11.17%	0.0054%
Total Market Capitalization:		29,802,059.78					13.78%

Notes:

- [1] Equals sum of Col. [9]  
[2] Source: Bloomberg Professional  
[3] Equals [1] - [2]  
[4] Source: Bloomberg Professional  
[5] Equals weight in S&P 500 based on market capitalization  
[6] Source: Bloomberg Professional  
[7] Source: Bloomberg Professional  
[8] Equals ([6] x (1 + (0.5 x [7]))) + [7]  
[9] Equals Col. [5] x Col. [8]

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 2020051-GU**  
**DOCKET NO. 20200166-GU**  
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**DOCUMENT NO. 4**  
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**FILED: 09/21/2020**

Ex-Ante Market Risk Premium  
Market DCF Method Based - Value Line

[1]	[2]	[3]
S&P 500	Current 30-Year	
Est. Required	Treasury (30-	Implied Market
Market Return	day average)	Risk Premium
13.83%	1.32%	12.51%

		[4]	[5]	[6]	[7]	[8]	[9]
Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Agilent Technologies Inc	A	30,637.64	0.11%	0.73%	10.00%	10.77%	0.0117%
American Airlines Group Inc	AAL	6,504.43	0.02%	0.00%	-2.00%	-2.00%	-0.0005%
Advance Auto Parts Inc	AAP	10,818.87	0.04%	0.64%	11.00%	11.68%	0.0045%
Apple Inc	AAPL	2,168,059.00	7.67%	0.66%	14.00%	14.71%	1.1285%
AbbVie Inc	ABBV	166,460.10	0.59%	5.00%	10.50%	15.76%	0.0929%
AmerisourceBergen Corp	ABC	19,918.83	0.07%	1.72%	7.00%	8.78%	0.0062%
ABIOMED Inc	ABMD	13,790.08	0.05%	0.00%	9.50%	9.50%	0.0046%
Abbott Laboratories	ABT	182,701.00	0.65%	1.40%	10.50%	11.97%	0.0774%
Accenture PLC	ACN	153,058.90	0.54%	1.37%	7.50%	8.92%	0.0483%
Adobe Inc	ADBE	253,675.20	0.90%	0.00%	19.50%	19.50%	0.1751%
Analog Devices Inc	ADI	44,488.19	0.16%	2.06%	7.00%	9.13%	0.0144%
Archer-Daniels-Midland Co	ADM	24,730.88	0.09%	3.24%	9.00%	12.39%	0.0108%
Automatic Data Processing Inc	ADP	60,004.37	0.21%	2.65%	11.00%	13.80%	0.0293%
Autodesk Inc	ADSK	54,407.63	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	19,382.53	0.07%	2.63%	6.00%	8.71%	0.0060%
American Electric Power Co Inc	AEP	38,991.43	0.14%	3.72%	5.00%	8.81%	0.0122%
AES Corp/The	AES	11,789.32	0.04%	3.22%	24.00%	27.61%	0.0115%
Aflac Inc	AFL	26,021.94	0.09%	3.13%	7.00%	10.24%	0.0094%
American International Group Inc	AIG	25,033.27	0.09%	4.41%	28.50%	33.54%	0.0297%
Apartment Investment and Management Co	AIV	5,383.69	0.02%	4.65%	-1.50%	3.12%	0.0006%
Assurant Inc	AIZ	7,250.51	0.03%	2.07%	11.50%	13.69%	0.0035%
Arthur J Gallagher & Co	AJG	20,006.01	0.07%	1.72%	13.00%	14.83%	0.0105%
Akamai Technologies Inc	AKAM	18,276.36	0.06%	0.00%	14.50%	14.50%	0.0094%
Albemarle Corp	ALB	9,772.37	0.03%	1.68%	4.00%	5.71%	0.0020%
Align Technology Inc	ALGN	23,689.45	0.08%	0.00%	19.50%	19.50%	0.0164%
Alaska Air Group Inc	ALK	4,536.32	0.02%	0.00%	1.00%	1.00%	0.0002%
Allstate Corp/The	ALL	29,112.13	0.10%	2.32%	6.00%	8.39%	0.0086%
Allegion plc	ALLE	9,450.19	0.03%	1.25%	9.00%	10.31%	0.0034%
Alexion Pharmaceuticals Inc	ALXN	22,852.13	0.08%	0.00%	19.50%	19.50%	0.0158%
Applied Materials Inc	AMAT	58,230.93	0.21%	1.38%	7.50%	8.93%	0.0184%
Amcor PLC	AMCR	17,728.05	N/A	4.38%	N/A	N/A	N/A
Advanced Micro Devices Inc	AMD	100,987.50	0.36%	0.00%	20.00%	20.00%	0.0715%
AMETEK Inc	AME	23,194.93	0.08%	0.71%	12.50%	13.25%	0.0109%
Amgen Inc	AMGN	146,705.50	0.52%	2.74%	6.50%	9.33%	0.0484%
Ameriprise Financial Inc	AMP	18,783.49	0.07%	2.67%	11.00%	13.82%	0.0092%
American Tower Corp	AMT	109,546.30	0.39%	1.95%	9.00%	11.04%	0.0428%
Amazon.com Inc	AMZN	1,724,367.00	6.10%	0.00%	33.50%	33.50%	2.0446%
Arista Networks Inc	ANET	16,867.80	0.06%	0.00%	5.50%	5.50%	0.0033%
ANSYS Inc	ANSS	28,420.43	0.10%	0.00%	10.00%	10.00%	0.0101%
Anthem Inc	ANTM	68,125.89	0.24%	1.52%	14.00%	15.63%	0.0377%
Aon PLC	AON	45,244.36	0.16%	0.92%	7.50%	8.45%	0.0135%
A O Smith Corp	AOS	7,986.72	0.03%	1.94%	5.00%	6.99%	0.0020%
Apache Corp	APA	5,314.61	0.02%	0.71%	3.00%	3.72%	0.0007%
Air Products and Chemicals Inc	APD	64,934.00	0.23%	1.82%	12.00%	13.93%	0.0320%
Amphenol Corp	APH	32,529.62	0.12%	0.92%	9.00%	9.96%	0.0115%
Aptiv PLC	APTIV	23,070.94	0.08%	0.00%	9.50%	9.50%	0.0078%
Alexandria Real Estate Equities Inc	ARE	18,915.34	0.07%	2.49%	16.50%	19.20%	0.0129%
Atmos Energy Corp	ATO	12,248.75	0.04%	2.48%	7.00%	9.57%	0.0041%
Activision Blizzard Inc	ATVI	65,193.72	0.23%	0.53%	11.00%	11.56%	0.0267%
AvalonBay Communities Inc	AVB	21,638.08	0.08%	4.23%	4.50%	8.83%	0.0068%
Broadcom Inc	AVGO	136,547.30	0.48%	3.83%	17.00%	21.16%	0.1022%
Avery Dennison Corp	AVY	9,659.11	0.03%	2.06%	11.00%	13.17%	0.0045%
American Water Works Co Inc	AWK	25,531.22	0.09%	1.60%	8.50%	10.17%	0.0092%
American Express Co	AXP	79,211.99	0.28%	1.75%	6.00%	7.80%	0.0219%
AutoZone Inc	AZO	27,971.14	0.10%	0.00%	13.00%	13.00%	0.0129%
Boeing Co/The	BA	97,023.80	0.34%	0.00%	-1.50%	-1.50%	-0.0052%
Bank of America Corp	BAC	221,454.00	0.78%	2.82%	5.00%	7.89%	0.0618%
Baxter International Inc	BAX	43,033.86	0.15%	1.16%	9.00%	10.21%	0.0156%
Best Buy Co Inc	BBY	28,863.67	0.10%	1.96%	8.00%	10.04%	0.0103%
Becton Dickinson and Co	BDX	73,620.93	0.26%	1.27%	9.00%	10.33%	0.0269%
Franklin Resources Inc	BEN	10,551.38	0.04%	5.21%	6.50%	11.88%	0.0044%
Brown-Forman Corp	BF/B	34,808.83	0.12%	0.99%	12.00%	13.05%	0.0161%
Biogen Inc	BIIB	44,192.61	0.16%	0.00%	7.00%	7.00%	0.0109%
Bio-Rad Laboratories Inc	BIO	15,231.04	0.05%	0.00%	12.00%	12.00%	0.0065%
Bank of New York Mellon Corp/The	BK	32,440.27	0.11%	3.39%	3.00%	6.44%	0.0074%
Booking Holdings Inc	BKNG	76,450.55	0.27%	0.00%	7.00%	7.00%	0.0189%
Baker Hughes Co	BKR	9,857.75	0.03%	4.78%	34.50%	40.10%	0.0140%

PEOPLES GAS SYSTEM  
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Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
BlackRock Inc	BLK	90,271.56	0.32%	2.45%	8.00%	10.55%	0.0337%
Ball Corp	BLL	25,758.07	0.09%	0.76%	19.00%	19.83%	0.0181%
Bristol-Myers Squibb Co	BMJ	140,375.10	0.50%	2.89%	12.50%	15.57%	0.0774%
Broadridge Financial Solutions Inc	BR	15,917.79	0.06%	1.65%	9.00%	10.72%	0.0060%
Berkshire Hathaway Inc	BRK/A	-	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	56,297.02	0.20%	0.00%	12.50%	12.50%	0.0249%
BorgWarner Inc	BWA	8,607.26	0.03%	1.64%	3.50%	5.17%	0.0016%
Boston Properties Inc	BXP	13,304.20	0.05%	4.56%	4.00%	8.65%	0.0041%
Citigroup Inc	C	105,862.80	0.37%	4.01%	3.50%	7.58%	0.0284%
Conagra Brands Inc	CAG	18,864.46	0.07%	2.25%	5.00%	7.31%	0.0049%
Cardinal Health Inc	CAH	14,877.40	0.05%	3.81%	12.50%	16.55%	0.0087%
Carrier Global Corp	CARR	26,877.10	N/A	1.03%	N/A	N/A	N/A
Caterpillar Inc	CAT	76,801.93	0.27%	2.91%	4.00%	6.97%	0.0189%
Chubb Ltd	CB	53,116.53	0.19%	2.48%	9.50%	12.10%	0.0227%
Boe Global Markets Inc	CBOE	9,921.90	0.04%	1.84%	12.50%	14.46%	0.0051%
CBRE Group Inc	CBRE	15,749.58	0.06%	0.00%	7.50%	7.50%	0.0042%
Crown Castle International Corp	CCI	67,124.49	0.24%	3.08%	14.00%	17.30%	0.0411%
Carnival Corp	CCL	11,582.24	0.04%	0.00%	-5.00%	-5.00%	-0.0020%
Cadence Design Systems Inc	CDNS	31,411.72	0.11%	0.00%	10.00%	10.00%	0.0111%
CDW Corp/DE	CDW	15,852.84	0.06%	1.37%	11.00%	12.45%	0.0070%
Celanese Corp	CE	12,158.82	0.04%	2.41%	5.50%	7.98%	0.0034%
Cerner Corp	CERN	21,793.08	0.08%	1.01%	9.00%	10.06%	0.0078%
CF Industries Holdings Inc	CF	7,162.74	0.03%	3.76%	26.50%	30.76%	0.0078%
Citizens Financial Group Inc	CFG	10,824.28	0.04%	6.15%	1.50%	7.70%	0.0029%
Church & Dwight Co Inc	CHD	23,687.95	0.08%	1.00%	8.00%	9.04%	0.0076%
CH Robinson Worldwide Inc	CHRW	13,105.95	0.05%	2.10%	8.00%	10.18%	0.0047%
Charter Communications Inc	CHTR	125,922.70	0.45%	0.00%	33.50%	33.50%	0.1493%
Cigna Corp	CI	63,929.52	0.23%	0.03%	11.50%	11.53%	0.0261%
Cincinnati Financial Corp	CINF	12,622.80	0.04%	3.06%	10.50%	13.72%	0.0061%
Colgate-Palmolive Co	CL	67,434.51	0.24%	2.24%	5.00%	7.30%	0.0174%
Clorox Co/The	CLX	27,800.16	0.10%	2.02%	4.50%	6.57%	0.0065%
Comerica Inc	CMA	5,460.10	0.02%	6.93%	0.50%	7.45%	0.0014%
Comcast Corp	CMCSA	201,910.00	0.71%	2.08%	9.50%	11.68%	0.0835%
CME Group Inc	CME	62,695.24	0.22%	1.94%	2.50%	4.46%	0.0099%
Chipotle Mexican Grill Inc	CMG	35,717.86	0.13%	0.00%	15.00%	15.00%	0.0190%
Cummins Inc	CMJ	30,870.54	0.11%	2.51%	4.00%	6.56%	0.0072%
CMS Energy Corp	CMS	17,006.22	0.06%	2.85%	7.50%	10.46%	0.0063%
Centene Corp	CNC	34,401.50	0.12%	0.00%	13.00%	13.00%	0.0158%
CenterPoint Energy Inc	CNP	9,864.03	0.03%	3.06%	4.50%	7.63%	0.0027%
Capital One Financial Corp	COF	30,245.88	0.11%	0.60%	-3.00%	-2.41%	-0.0026%
Cabot Oil & Gas Corp	COG	7,445.44	0.03%	2.41%	11.50%	14.05%	0.0037%
Cooper Cos Inc/The	COO	14,997.60	0.05%	0.02%	11.00%	11.02%	0.0059%
ConocoPhillips	COP	40,285.57	0.14%	4.47%	10.50%	15.20%	0.0217%
Costco Wholesale Corp	COST	152,003.10	0.54%	0.81%	9.50%	10.35%	0.0557%
Coty Inc	COTY	2,937.94	0.01%	0.00%	10.50%	10.50%	0.0011%
Campbell Soup Co	CPB	17,274.04	0.06%	2.62%	3.00%	5.66%	0.0035%
Copart Inc	CPRT	24,040.42	0.09%	0.00%	14.00%	14.00%	0.0119%
salesforce.com Inc	CRM	244,815.70	0.87%	0.00%	31.50%	31.50%	0.2729%
Cisco Systems Inc	CSCO	178,295.00	0.63%	3.41%	7.00%	10.53%	0.0664%
CSX Corp	CSX	57,692.65	0.20%	1.38%	9.50%	10.95%	0.0224%
Cintas Corp	CTAS	33,708.12	0.12%	0.89%	13.00%	13.95%	0.0166%
CenturyLink Inc	CTL	12,320.59	0.04%	8.91%	2.50%	11.52%	0.0050%
Cognizant Technology Solutions Corp	CTSH	36,720.50	0.13%	1.30%	4.00%	5.33%	0.0069%
Corteva Inc	CTVA	21,878.22	N/A	1.95%	N/A	N/A	N/A
Citrix Systems Inc	CTXS	17,822.27	0.06%	0.97%	9.00%	10.01%	0.0063%
CVS Health Corp	CVS	81,948.90	0.29%	3.19%	6.00%	9.29%	0.0269%
Chevron Corp	CVX	158,307.00	0.56%	6.09%	10.50%	16.91%	0.0947%
Concho Resources Inc	CXO	10,047.79	0.04%	1.57%	6.00%	7.62%	0.0027%
Dominion Energy Inc	D	65,597.82	0.23%	3.61%	6.00%	9.72%	0.0226%
Delta Air Lines Inc	DAL	19,103.82	0.07%	0.00%	5.00%	5.00%	0.0034%
DuPont de Nemours Inc	DD	41,761.70	N/A	2.20%	N/A	N/A	N/A
Deere & Co	DE	66,125.27	0.23%	1.44%	5.00%	6.48%	0.0152%
Discover Financial Services	DFS	15,789.82	0.06%	3.42%	4.50%	8.00%	0.0045%
Dollar General Corp	DG	50,825.35	0.18%	0.71%	12.50%	13.25%	0.0238%
Quest Diagnostics Inc	DGX	15,856.22	0.06%	1.89%	9.00%	10.98%	0.0062%
DR Horton Inc	DHI	26,934.30	0.10%	0.95%	6.50%	7.48%	0.0071%
Danaher Corp	DHR	147,648.30	0.52%	0.35%	14.50%	14.88%	0.0777%
Walt Disney Co/The	DIS	235,412.60	0.83%	0.00%	5.50%	5.50%	0.0458%
Discovery Inc	DISCA	11,544.39	0.04%	0.00%	15.00%	15.00%	0.0061%
DISH Network Corp	DISH	18,128.83	0.06%	0.00%	-1.00%	-1.00%	-0.0006%
Digital Realty Trust Inc	DLR	32,162.40	0.11%	2.96%	8.50%	11.59%	0.0132%
Dollar Tree Inc	DLTR	24,736.15	0.09%	0.00%	8.50%	8.50%	0.0074%
Dover Corp	DOV	16,049.78	0.06%	1.78%	5.50%	7.33%	0.0042%
Dow Inc	DOW	34,936.88	N/A	6.26%	N/A	N/A	N/A
Domino's Pizza Inc	DPZ	16,450.59	0.06%	0.75%	13.50%	14.30%	0.0083%
Duke Realty Corp	DRE	14,224.95	0.05%	2.43%	-3.00%	-0.61%	-0.0003%
Darden Restaurants Inc	DRI	10,746.63	0.04%	0.00%	6.50%	6.50%	0.0025%
DTE Energy Co	DTE	22,297.43	0.08%	3.69%	5.00%	8.78%	0.0069%

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 2020051-GU**  
**DOCKET NO. 20200166-GU**  
**EXHIBIT NO. (DWD-1)**  
**WITNESS: D'ASCENDIS**  
**DOCUMENT NO. 4**  
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**FILED: 09/21/2020**

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Duke Energy Corp	DUK	58,469.25	0.21%	4.88%	5.00%	10.00%	0.0207%
DaVita Inc	DVA	10,676.04	0.04%	0.00%	12.00%	12.00%	0.0045%
Devon Energy Corp	DVN	4,098.10	0.01%	4.11%	2.50%	6.66%	0.0010%
DXC Technology Co	DXC	4,989.21	0.02%	0.00%	4.50%	4.50%	0.0008%
DexCom Inc	DXCM	40,610.82	0.14%	0.00%	61.00%	61.00%	0.0877%
Electronic Arts Inc	EA	41,509.07	0.15%	0.00%	10.00%	10.00%	0.0147%
eBay Inc	EBAY	41,298.90	0.15%	1.13%	18.50%	19.73%	0.0288%
Ecolab Inc	ECL	56,252.04	0.20%	0.95%	8.50%	9.49%	0.0189%
Consolidated Edison Inc	ED	23,640.52	0.08%	4.39%	3.00%	7.46%	0.0062%
Equifax Inc	EFX	19,594.30	0.07%	0.97%	7.50%	8.51%	0.0059%
Edison International	EIX	19,322.59	0.07%	5.09%	14.00%	19.45%	0.0133%
Estee Lauder Cos Inc/The	EL	78,001.77	0.28%	0.89%	11.50%	12.44%	0.0343%
Eastman Chemical Co	EMN	9,914.71	0.04%	3.60%	5.00%	8.69%	0.0030%
Emerson Electric Co	EMR	42,934.97	0.15%	2.85%	8.50%	11.47%	0.0174%
EOG Resources Inc	EOG	25,187.92	0.09%	3.51%	7.50%	11.14%	0.0099%
Equinix Inc	EQIX	67,018.18	0.24%	1.40%	16.00%	17.51%	0.0415%
Equity Residential	EQR	20,412.17	0.07%	4.39%	1.00%	5.41%	0.0039%
Eversource Energy	ES	28,442.51	0.10%	2.79%	5.50%	8.37%	0.0084%
Essex Property Trust Inc	ESS	14,064.38	0.05%	3.96%	1.00%	4.98%	0.0025%
E*TRADE Financial Corp	ETFC	11,863.80	0.04%	1.04%	5.50%	6.57%	0.0028%
Eaton Corp PLC	ETN	40,970.24	0.15%	2.85%	4.00%	6.91%	0.0100%
Entergy Corp	ETR	19,270.21	0.07%	3.93%	3.00%	6.99%	0.0048%
Every Inc	EVERG	11,459.20	N/A	4.18%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	50,656.53	0.18%	0.00%	13.50%	13.50%	0.0242%
Exelon Corp	EXC	36,319.76	0.13%	4.21%	5.00%	9.32%	0.0120%
Expeditors International of Washington I	EXPD	14,604.74	0.05%	1.19%	5.50%	6.72%	0.0035%
Expedia Group Inc	EXPE	13,430.86	0.05%	0.00%	12.00%	12.00%	0.0057%
Extra Space Storage Inc	EXR	13,704.70	0.05%	3.40%	3.00%	6.45%	0.0031%
Ford Motor Co	F	27,132.61	0.10%	0.00%	11.00%	11.00%	0.0106%
Diamondback Energy Inc	FANG	6,216.69	0.02%	3.81%	0.50%	4.32%	0.0010%
Fastenal Co	FAST	27,583.03	0.10%	2.08%	8.00%	10.16%	0.0099%
Facebook Inc	FB	866,143.40	3.07%	0.00%	13.50%	13.50%	0.4139%
Fortune Brands Home & Security Inc	FBHS	11,835.14	0.04%	1.12%	5.00%	6.15%	0.0026%
Freeport-McMoRan Inc	FCX	21,794.52	0.08%	0.00%	17.00%	17.00%	0.0131%
FedEx Corp	FDX	56,369.70	0.20%	1.21%	3.00%	4.23%	0.0084%
FirstEnergy Corp	FE	15,184.50	0.05%	5.68%	8.50%	14.42%	0.0078%
F5 Networks Inc	FFIV	8,184.36	0.03%	0.00%	6.50%	6.50%	0.0019%
Fidelity National Information Services I	FIS	91,396.03	0.32%	0.95%	28.50%	29.59%	0.0957%
Fiserv Inc	FISV	65,561.04	0.23%	0.00%	14.00%	14.00%	0.0325%
Fifth Third Bancorp	FITB	14,464.82	0.05%	5.32%	2.00%	7.37%	0.0038%
FLIR Systems Inc	FLIR	4,725.06	0.02%	1.89%	7.50%	9.46%	0.0016%
Flowserve Corp	FLS	3,835.24	0.01%	2.71%	9.50%	12.34%	0.0017%
FleetCor Technologies Inc	FLT	20,575.44	0.07%	0.00%	14.00%	14.00%	0.0102%
FMC Corp	FMC	14,082.53	0.05%	1.71%	11.00%	12.80%	0.0064%
Fox Corp	FOXA	16,390.97	N/A	1.69%	N/A	N/A	N/A
First Republic Bank/CA	FRC	19,520.62	0.07%	0.71%	9.00%	9.74%	0.0067%
Federal Realty Investment Trust	FRT	6,025.91	0.02%	5.34%	1.50%	6.88%	0.0015%
TechnipFMC PLC	FTI	N/A	N/A	0.00%	N/A	N/A	N/A
Fortinet Inc	FTNT	22,202.20	0.08%	0.00%	21.00%	21.00%	0.0165%
Fortive Corp	FTV	23,927.00	0.08%	0.39%	10.50%	10.91%	0.0092%
General Dynamics Corp	GD	43,174.66	0.15%	2.92%	6.00%	9.01%	0.0138%
General Electric Co	GE	56,721.31	0.20%	0.62%	4.00%	4.63%	0.0093%
Gilead Sciences Inc	GILD	82,262.41	0.29%	4.15%	3.50%	7.72%	0.0225%
General Mills Inc	GIS	39,179.65	0.14%	3.05%	3.50%	6.60%	0.0092%
Globe Life Inc	GL	8,957.49	0.03%	0.89%	8.00%	8.93%	0.0028%
Corning Inc	GLW	24,880.02	0.09%	2.69%	13.50%	16.37%	0.0144%
General Motors Co	GM	42,188.74	0.15%	0.00%	3.00%	3.00%	0.0045%
Alphabet Inc	GOOGL	N/A	N/A	0.00%	N/A	N/A	N/A
Genuine Parts Co	GPC	13,613.91	0.05%	3.35%	6.50%	9.96%	0.0048%
Global Payments Inc	GPN	52,421.56	0.19%	0.45%	11.50%	11.98%	0.0222%
Gap Inc/The	GPS	6,352.19	0.02%	0.00%	2.50%	2.50%	0.0006%
Garmin Ltd	GRMN	20,015.31	0.07%	2.33%	7.00%	9.41%	0.0067%
Goldman Sachs Group Inc/The	GS	71,253.84	0.25%	2.41%	6.50%	8.99%	0.0227%
WW Grainger Inc	GWV	19,365.74	0.07%	1.69%	7.00%	8.75%	0.0060%
Halliburton Co	HAL	13,865.37	0.05%	1.14%	1.50%	2.65%	0.0013%
Hasbro Inc	HAS	10,886.40	0.04%	3.42%	9.00%	12.57%	0.0048%
Huntington Bancshares Inc/OH	HBAN	9,572.89	0.03%	6.38%	2.50%	8.96%	0.0030%
Hanesbrands Inc	HBI	5,419.81	0.02%	3.85%	3.50%	7.42%	0.0014%
HCA Healthcare Inc	HCA	44,485.68	0.16%	0.34%	11.00%	11.36%	0.0179%
Home Depot Inc/The	HD	314,116.70	1.11%	2.06%	7.00%	9.13%	0.1015%
Hess Corp	HES	14,220.77	N/A	2.16%	N/A	N/A	N/A
HollyFrontier Corp	HFC	4,194.78	0.01%	5.56%	1.50%	7.10%	0.0011%
Hartford Financial Services Group Inc/Th	HIG	14,482.01	0.05%	3.21%	8.50%	11.85%	0.0061%
Huntington Ingalls Industries Inc	HII	6,232.55	0.02%	2.68%	7.50%	10.28%	0.0023%
Hilton Worldwide Holdings Inc	HLT	24,070.42	0.09%	0.00%	14.50%	14.50%	0.0124%
Hologic Inc	HOLX	17,053.75	0.06%	0.00%	20.50%	20.50%	0.0124%
Honeywell International Inc	HON	116,014.60	0.41%	2.18%	7.50%	9.76%	0.0401%
Hewlett Packard Enterprise Co	HPE	12,399.39	0.04%	4.96%	5.00%	10.08%	0.0044%

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 20200051-GU**  
**DOCKET NO. 20200166-GU**  
**EXHIBIT NO. (DWD-1)**  
**WITNESS: D'ASCENDIS**  
**DOCUMENT NO. 4**  
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**FILED: 09/21/2020**

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
HP Inc	HPQ	26,211.90	0.09%	3.82%	8.00%	11.97%	0.0111%
H&R Block Inc	HRB	2,744.69	0.01%	7.36%	12.50%	20.32%	0.0020%
Hormel Foods Corp	HRL	27,475.62	0.10%	1.96%	8.50%	10.54%	0.0103%
Henry Schein Inc	HSIC	9,353.90	0.03%	0.00%	5.00%	5.00%	0.0017%
Host Hotels & Resorts Inc	HST	7,854.53	0.03%	0.00%	-9.00%	-9.00%	-0.0025%
Hershey Co/The	HSY	31,020.51	0.11%	2.18%	5.00%	7.23%	0.0079%
Humana Inc	HUM	53,410.25	0.19%	0.66%	10.50%	11.19%	0.0212%
Howmet Aerospace Inc	HWM	7,497.28	0.03%	0.00%	2.00%	2.00%	0.0005%
International Business Machines Corp	IBM	110,249.50	0.39%	5.25%	0.50%	5.76%	0.0225%
Intercontinental Exchange Inc	ICE	57,120.00	0.20%	1.14%	9.50%	10.69%	0.0216%
IDEXX Laboratories Inc	IDXX	32,830.62	0.12%	0.00%	14.50%	14.50%	0.0168%
IDEX Corp	IEX	13,584.60	0.05%	1.11%	6.50%	7.65%	0.0037%
International Flavors & Fragrances Inc	IFF	13,355.81	0.05%	2.50%	6.50%	9.08%	0.0043%
Illumina Inc	ILMN	51,619.76	0.18%	0.00%	9.50%	9.50%	0.0174%
Incyte Corp	INCY	20,443.97	0.07%	0.00%	63.00%	63.00%	0.0456%
IHS Markit Ltd	INFO	31,867.01	0.11%	0.85%	12.00%	12.90%	0.0146%
Intel Corp	INTC	210,736.20	0.75%	2.66%	7.00%	9.75%	0.0727%
Intuit Inc	INTU	89,264.82	0.32%	0.69%	12.50%	13.23%	0.0418%
International Paper Co	IP	14,218.43	0.05%	5.67%	6.00%	11.84%	0.0060%
Interpublic Group of Cos Inc/The	IPG	6,977.74	0.02%	5.70%	10.00%	15.99%	0.0039%
IPG Photonics Corp	IPGP	8,331.49	0.03%	0.00%	8.50%	8.50%	0.0025%
IQVIA Holdings Inc	IQV	30,324.87	0.11%	0.00%	10.50%	10.50%	0.0113%
Ingersoll Rand Inc	IR	N/A	N/A	0.00%	N/A	N/A	N/A
Iron Mountain Inc	IRM	8,719.21	0.03%	8.20%	8.50%	17.05%	0.0053%
Intuitive Surgical Inc	ISRG	81,898.83	0.29%	0.00%	12.50%	12.50%	0.0362%
Gartner Inc	IT	11,750.81	0.04%	0.00%	9.50%	9.50%	0.0040%
Illinois Tool Works Inc	ITW	62,892.18	0.22%	2.29%	8.50%	10.89%	0.0242%
Invesco Ltd	IVZ	4,850.57	0.02%	5.87%	4.50%	10.50%	0.0018%
Jacobs Engineering Group Inc	J	11,513.12	0.04%	0.86%	14.00%	14.92%	0.0061%
JB Hunt Transport Services Inc	JBHT	15,003.10	0.05%	0.77%	6.50%	7.30%	0.0039%
Johnson Controls International plc	JCI	30,558.05	0.11%	2.53%	8.00%	10.63%	0.0115%
Jack Henry & Associates Inc	JKHY	12,813.29	0.05%	1.03%	10.00%	11.08%	0.0050%
Johnson & Johnson	JNJ	400,911.00	1.42%	2.65%	10.00%	12.78%	0.1814%
Juniper Networks Inc	JNPR	7,997.29	0.03%	3.32%	5.50%	8.91%	0.0025%
JPMorgan Chase & Co	JPM	301,929.50	1.07%	3.63%	3.00%	6.68%	0.0714%
Kellogg Co	K	24,140.34	0.09%	3.27%	3.00%	6.32%	0.0054%
KeyCorp	KEY	11,965.11	0.04%	6.04%	3.00%	9.13%	0.0039%
Keysight Technologies Inc	KEYS	18,300.06	0.06%	0.00%	17.00%	17.00%	0.0110%
Kraft Heinz Co/The	KHC	43,184.13	0.15%	4.53%	-0.50%	4.02%	0.0061%
Kimco Realty Corp	KIM	4,996.10	0.02%	0.00%	5.00%	5.00%	0.0009%
KLA Corp	KLAC	32,906.05	0.12%	1.70%	16.50%	18.34%	0.0214%
Kimberly-Clark Corp	KMB	53,199.59	0.19%	2.74%	6.50%	9.33%	0.0176%
Kinder Morgan Inc	KMI	31,049.64	0.11%	7.65%	18.50%	26.86%	0.0295%
CarMax Inc	KMX	17,452.22	0.06%	0.00%	7.00%	7.00%	0.0043%
Coca-Cola Co/The	KO	206,847.20	0.73%	3.49%	6.50%	10.10%	0.0740%
Kroger Co/The	KR	28,295.86	0.10%	1.98%	7.00%	9.05%	0.0091%
Kohl's Corp	KSS	3,272.18	0.01%	0.00%	0.50%	0.50%	0.0001%
Kansas City Southern	KSU	17,279.00	0.06%	0.87%	11.50%	12.42%	0.0076%
Loews Corp	L	10,067.94	0.04%	0.70%	12.50%	13.24%	0.0047%
L Brands Inc	LB	8,551.28	0.03%	0.00%	9.00%	9.00%	0.0027%
Leidos Holdings Inc	LDOS	12,856.68	0.05%	1.50%	10.50%	12.08%	0.0055%
Leggett & Platt Inc	LEG	5,380.45	0.02%	3.94%	8.00%	12.10%	0.0023%
Lennar Corp	LEN	24,089.47	0.09%	0.65%	7.00%	7.67%	0.0065%
Laboratory Corp of America Holdings	LH	17,444.92	0.06%	0.00%	8.00%	8.00%	0.0049%
L3Harris Technologies Inc	LHX	38,889.45	N/A	1.90%	N/A	N/A	N/A
Linde PLC	LIN	132,853.00	N/A	1.65%	N/A	N/A	N/A
LKQ Corp	LKQ	9,686.52	0.03%	0.00%	8.00%	8.00%	0.0027%
Eli Lilly and Co	LLY	142,762.10	0.51%	1.98%	10.00%	12.08%	0.0610%
Lockheed Martin Corp	LMT	110,542.10	0.39%	2.58%	8.50%	11.19%	0.0438%
Lincoln National Corp	LNC	6,953.56	0.02%	4.67%	9.50%	14.39%	0.0035%
Alliant Energy Corp	LNT	13,490.76	0.05%	2.81%	5.50%	8.39%	0.0040%
Lowe's Cos Inc	LOW	128,814.90	0.46%	1.41%	10.00%	11.48%	0.0523%
Lam Research Corp	LRCX	51,127.45	0.18%	1.34%	10.00%	11.41%	0.0206%
Southwest Airlines Co	LUV	21,459.54	N/A	0.00%	N/A	N/A	N/A
Las Vegas Sands Corp	LVS	38,093.04	0.13%	0.00%	5.50%	5.50%	0.0074%
Lamb Weston Holdings Inc	LW	8,974.10	0.03%	1.50%	5.00%	6.54%	0.0021%
LyondellBasell Industries NV	LYB	23,137.76	0.08%	6.06%	-1.50%	4.51%	0.0037%
Live Nation Entertainment Inc	LYV	11,436.30	N/A	0.00%	N/A	N/A	N/A
Mastercard Inc	MA	352,424.10	1.25%	0.46%	13.00%	13.49%	0.1683%
Mid-America Apartment Communities Inc	MAA	12,938.37	0.05%	3.52%	0.50%	4.03%	0.0018%
Marriott International Inc/MD	MAR	31,580.34	0.11%	0.00%	5.50%	5.50%	0.0061%
Masco Corp	MAS	15,389.64	0.05%	0.93%	6.00%	6.96%	0.0038%
McDonald's Corp	MCD	159,058.80	0.56%	2.34%	8.00%	10.43%	0.0587%
Microchip Technology Inc	MCHP	27,171.20	0.10%	1.37%	8.00%	9.42%	0.0091%
McKesson Corp	MCK	24,636.96	0.09%	1.11%	9.00%	10.16%	0.0089%
Moody's Corp	MCO	54,797.85	0.19%	0.77%	8.50%	9.30%	0.0180%
Mondelez International Inc	MDLZ	83,341.29	0.29%	2.16%	8.00%	10.25%	0.0302%
Medtronic PLC	MDT	139,579.10	0.49%	2.23%	6.50%	8.80%	0.0435%



PEOPLES GAS SYSTEM  
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Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
MetLife Inc	MET	34,778.04	0.12%	4.80%	7.00%	11.97%	0.0147%
MGM Resorts International	MGM	10,847.25	0.04%	0.05%	30.00%	30.06%	0.0115%
Mohawk Industries Inc	MHK	6,639.65	0.02%	0.00%	-3.00%	-3.00%	-0.0007%
McCormick & Co Inc/MD	MKC	27,377.33	0.10%	1.22%	6.50%	7.76%	0.0075%
MarketAxess Holdings Inc	MKTX	18,946.62	0.07%	0.48%	15.50%	16.02%	0.0107%
Martin Marietta Materials Inc	MLM	12,987.68	0.05%	1.09%	9.50%	10.64%	0.0049%
Marsh & McLennan Cos Inc	MMC	57,838.61	0.20%	1.63%	9.00%	10.70%	0.0219%
3M Co	MMM	94,409.51	0.33%	3.59%	4.50%	8.17%	0.0273%
Monster Beverage Corp	MNST	44,282.50	0.16%	0.00%	11.50%	11.50%	0.0180%
Altria Group Inc	MO	80,282.36	0.28%	7.96%	6.00%	14.20%	0.0403%
Mosaic Co/The	MOS	7,001.79	0.02%	1.25%	18.50%	19.87%	0.0049%
Marathon Petroleum Corp	MPC	22,964.50	0.08%	6.57%	3.00%	9.67%	0.0079%
Merck & Co Inc	MRK	216,345.00	0.77%	2.85%	9.00%	11.98%	0.0917%
Marathon Oil Corp	MRO	4,187.00	0.01%	0.00%	11.50%	11.50%	0.0017%
Morgan Stanley	MS	81,500.39	0.29%	2.71%	5.00%	7.78%	0.0224%
MSCI Inc	MSCI	31,078.02	0.11%	0.84%	17.00%	17.91%	0.0197%
Microsoft Corp	MSFT	1,674,327.00	5.93%	0.92%	15.00%	15.99%	0.9475%
Motorola Solutions Inc	MSI	26,050.77	0.09%	1.70%	8.00%	9.77%	0.0090%
M&T Bank Corp	MTB	13,307.97	0.05%	4.24%	4.00%	8.32%	0.0039%
Mettler-Toledo International Inc	MTD	23,302.21	0.08%	0.00%	10.50%	10.50%	0.0087%
Micron Technology Inc	MU	49,995.52	0.18%	0.00%	13.50%	13.50%	0.0239%
Maxim Integrated Products Inc	MXIM	18,812.35	0.07%	2.73%	3.50%	6.28%	0.0042%
Mylan NV	MYL	8,431.41	0.03%	0.00%	10.00%	10.00%	0.0030%
Noble Energy Inc	NBL	4,879.10	N/A	0.80%	N/A	N/A	N/A
Norwegian Cruise Line Holdings Ltd	NCLH	4,029.78	0.01%	0.00%	-4.50%	-4.50%	-0.0006%
Nasdaq Inc	NDAQ	21,769.56	0.08%	1.48%	6.50%	8.03%	0.0062%
NextEra Energy Inc	NEE	136,611.80	0.48%	2.11%	10.00%	12.22%	0.0591%
Newmont Corp	NEM	52,995.69	0.19%	1.52%	13.00%	14.62%	0.0274%
Netflix Inc	NFLX	241,469.00	0.85%	0.00%	24.00%	24.00%	0.2051%
NiSource Inc	NI	8,496.93	0.03%	3.79%	12.50%	16.53%	0.0050%
NIKE Inc	NKE	173,429.10	0.61%	0.88%	16.00%	16.95%	0.1040%
NortonLifeLock Inc	NLOK	14,308.11	0.05%	2.07%	6.50%	8.64%	0.0044%
Nielsen Holdings PLC	NLSN	5,408.39	N/A	1.58%	N/A	N/A	N/A
Northrop Grumman Corp	NOC	56,915.77	0.20%	1.70%	11.00%	12.79%	0.0258%
National Oilwell Varco Inc	NOV	4,623.72	N/A	0.00%	N/A	N/A	N/A
ServiceNow Inc	NOW	93,541.35	0.33%	0.00%	46.00%	46.00%	0.1523%
NRG Energy Inc	NRG	8,286.04	0.03%	3.54%	-1.50%	2.01%	0.0006%
Norfolk Southern Corp	NSC	54,358.62	0.19%	1.77%	11.50%	13.37%	0.0257%
NetApp Inc	NTAP	9,243.99	0.03%	4.74%	7.00%	11.91%	0.0039%
Northern Trust Corp	NTRS	17,217.62	0.06%	3.38%	4.50%	7.96%	0.0048%
Nucor Corp	NUE	13,736.22	0.05%	3.54%	3.00%	6.59%	0.0032%
NVIDIA Corp	NVDA	315,237.60	1.12%	0.13%	9.50%	9.64%	0.1075%
NVR Inc	NVR	15,504.28	0.05%	0.00%	9.00%	9.00%	0.0049%
Newell Brands Inc	NWL	6,782.96	0.02%	5.75%	4.50%	10.38%	0.0025%
News Corp	NWSA	8,827.11	N/A	1.33%	N/A	N/A	N/A
Realty Income Corp	O	20,577.62	0.07%	4.62%	6.50%	11.27%	0.0082%
Old Dominion Freight Line Inc	ODFL	23,349.66	0.08%	0.31%	7.50%	7.82%	0.0065%
ONEOK Inc	OKE	11,797.87	0.04%	14.38%	10.00%	25.10%	0.0105%
Omnicom Group Inc	OMC	11,529.87	0.04%	4.85%	5.50%	10.48%	0.0043%
Oracle Corp	ORCL	176,321.80	0.62%	1.67%	10.50%	12.26%	0.0765%
O'Reilly Automotive Inc	ORLY	34,285.14	0.12%	0.00%	10.00%	10.00%	0.0121%
Otis Worldwide Corp	OTIS	27,796.36	N/A	1.25%	N/A	N/A	N/A
Occidental Petroleum Corp	OXY	11,899.90	0.04%	0.31%	14.50%	14.83%	0.0062%
Paycom Software Inc	PAYC	17,036.84	0.06%	0.00%	23.00%	23.00%	0.0139%
Paychex Inc	PAYX	27,211.39	0.10%	3.32%	7.50%	10.94%	0.0105%
People's United Financial Inc	PBCT	4,441.32	0.02%	6.88%	3.00%	9.98%	0.0016%
PACCAR Inc	PCAR	30,039.64	0.11%	2.65%	3.50%	6.20%	0.0066%
Healthpeak Properties Inc	PEAK	13,792.56	0.05%	5.42%	-15.00%	-9.99%	-0.0049%
Public Service Enterprise Group Inc	PEG	26,434.80	0.09%	3.81%	5.00%	8.91%	0.0083%
PepsiCo Inc	PEP	191,781.00	0.68%	2.95%	6.00%	9.04%	0.0614%
Pfizer Inc	PFE	211,253.60	0.75%	4.00%	8.50%	12.67%	0.0947%
Principal Financial Group Inc	PFGB	11,947.58	0.04%	5.13%	4.50%	9.75%	0.0041%
Procter & Gamble Co/The	PG	342,604.30	1.21%	2.28%	8.50%	10.88%	0.1319%
Progressive Corp/The	PGR	53,947.10	0.19%	0.43%	9.50%	9.95%	0.0190%
Parker-Hannifin Corp	PH	26,897.36	0.10%	1.68%	9.00%	10.76%	0.0102%
PulteGroup Inc	PHM	12,413.96	0.04%	1.06%	5.50%	6.59%	0.0029%
Packaging Corp of America	PKG	9,466.73	0.03%	3.26%	4.00%	7.33%	0.0025%
PerkinElmer Inc	PKI	13,317.68	0.05%	0.23%	12.00%	12.24%	0.0058%
Prologis Inc	PLD	63,830.45	0.23%	2.38%	6.00%	8.45%	0.0191%
Philip Morris International Inc	PM	124,551.50	0.44%	5.85%	4.50%	10.48%	0.0462%
PNC Financial Services Group Inc/The	PNC	46,881.75	0.17%	4.17%	3.00%	7.23%	0.0120%
Pentair PLC	PNR	7,626.84	0.03%	1.65%	4.00%	5.68%	0.0015%
Pinnacle West Capital Corp	PNW	8,198.88	0.03%	4.49%	4.00%	8.58%	0.0025%
PPG Industries Inc	PPG	28,305.44	0.10%	1.80%	3.00%	4.83%	0.0048%
PPL Corp	PPL	21,279.91	0.08%	6.03%	2.50%	8.61%	0.0065%
Perrigo Co PLC	PRGO	7,123.94	0.03%	1.82%	3.50%	5.35%	0.0013%
Prudential Financial Inc	PRU	26,895.95	0.10%	6.44%	5.50%	12.12%	0.0115%
Public Storage	PSA	36,368.11	0.13%	3.84%	4.00%	7.92%	0.0102%

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Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Phillips 66	PSX	26,218.52	0.09%	6.16%	3.50%	9.77%	0.0091%
PVH Corp	PVH	3,765.90	0.01%	0.00%	3.50%	3.50%	0.0005%
Quanta Services Inc	PWR	7,082.53	0.03%	0.39%	11.50%	11.91%	0.0030%
Pioneer Natural Resources Co	PXD	17,152.06	0.06%	2.11%	12.00%	14.24%	0.0086%
PayPal Holdings Inc	PYPL	238,682.00	0.84%	0.00%	15.50%	15.50%	0.1309%
QUALCOMM Inc	QCOM	130,893.10	0.46%	2.24%	12.50%	14.88%	0.0689%
Qorvo Inc	QRVO	15,038.70	0.05%	0.00%	53.00%	53.00%	0.0282%
Royal Caribbean Cruises Ltd	RCL	13,157.94	0.05%	0.00%	-0.50%	-0.50%	-0.0002%
Everest Re Group Ltd	RE	8,672.73	0.03%	2.86%	10.50%	13.51%	0.0041%
Regency Centers Corp	REG	6,719.60	0.02%	5.94%	14.50%	20.87%	0.0050%
Regeneron Pharmaceuticals Inc	REGN	64,889.75	0.23%	0.00%	9.50%	9.50%	0.0218%
Regions Financial Corp	RF	10,925.70	0.04%	5.45%	5.00%	10.59%	0.0041%
Robert Half International Inc	RHI	6,186.85	0.02%	2.59%	7.00%	9.68%	0.0021%
Raymond James Financial Inc	RJF	10,304.36	0.04%	1.97%	6.50%	8.53%	0.0031%
Ralph Lauren Corp	RL	4,945.22	0.02%	0.00%	6.50%	6.50%	0.0011%
ResMed Inc	RMD	26,050.73	0.09%	0.87%	14.50%	15.43%	0.0142%
Rockwell Automation Inc	ROK	26,957.24	0.10%	1.76%	7.00%	8.82%	0.0084%
Rollins Inc	ROL	18,325.01	0.06%	0.57%	12.00%	12.60%	0.0082%
Roper Technologies Inc	ROP	45,281.23	0.16%	0.47%	8.00%	8.49%	0.0136%
Ross Stores Inc	ROST	31,983.15	0.11%	0.00%	7.50%	7.50%	0.0085%
Republic Services Inc	RSG	29,287.13	0.10%	1.85%	9.00%	10.93%	0.0113%
Raytheon Technologies Corp	RTX	92,835.59	N/A	3.16%	N/A	N/A	N/A
SBA Communications Corp	SBAC	33,962.64	0.12%	0.72%	32.00%	32.84%	0.0395%
Starbucks Corp	SBUX	96,329.05	0.34%	2.18%	13.50%	15.83%	0.0540%
Charles Schwab Corp/The	SCHW	45,638.14	0.16%	2.09%	6.50%	8.66%	0.0140%
Sealed Air Corp	SEE	6,333.10	0.02%	1.57%	26.00%	27.77%	0.0062%
Sherwin-Williams Co/The	SHW	61,614.44	0.22%	0.79%	8.50%	9.32%	0.0203%
SVB Financial Group	SIVB	12,901.62	0.05%	0.00%	4.50%	4.50%	0.0021%
J M Smucker Co/The	SJM	13,887.81	0.05%	2.96%	3.00%	6.00%	0.0030%
Schlumberger NV	SLB	25,915.86	N/A	2.68%	N/A	N/A	N/A
SL Green Realty Corp	SLG	3,781.71	0.01%	7.51%	-1.50%	5.95%	0.0008%
Snap-on Inc	SNA	8,017.79	0.03%	3.22%	5.00%	8.30%	0.0024%
Synopsys Inc	SNPS	33,351.86	0.12%	0.00%	12.00%	12.00%	0.0142%
Southern Co/The	SO	54,623.10	0.19%	5.03%	3.00%	8.11%	0.0157%
Simon Property Group Inc	SPG	20,347.95	0.07%	7.84%	-1.00%	6.80%	0.0049%
S&P Global Inc	SPGI	87,822.80	0.31%	0.78%	9.50%	10.32%	0.0321%
Sempra Energy	SRE	35,845.62	0.13%	3.55%	10.00%	13.73%	0.0174%
STERIS PLC	STE	13,122.21	0.05%	1.04%	10.00%	11.09%	0.0052%
State Street Corp	STT	23,954.99	0.08%	3.06%	3.50%	6.61%	0.0056%
Seagate Technology PLC	STX	12,667.21	0.04%	5.80%	3.00%	8.89%	0.0040%
Constellation Brands Inc	STZ	34,673.31	0.12%	1.71%	7.00%	8.77%	0.0108%
Stanley Black & Decker Inc	SWK	25,501.06	0.09%	1.79%	6.00%	7.84%	0.0071%
Skyworks Solutions Inc	SWKS	23,846.84	0.08%	1.40%	10.00%	11.47%	0.0097%
Synchrony Financial	SYF	14,271.81	0.05%	3.60%	4.50%	8.18%	0.0041%
Stryker Corp	SYK	70,992.16	0.25%	1.22%	10.50%	11.78%	0.0296%
Sysco Corp	SY	29,163.88	0.10%	3.13%	8.50%	11.76%	0.0121%
AT&T Inc	T	213,688.50	0.76%	7.00%	5.50%	12.69%	0.0960%
Molson Coors Beverage Co	TAP	8,122.50	0.03%	0.00%	4.50%	4.50%	0.0013%
TransDigm Group Inc	TDG	26,272.80	0.09%	0.00%	8.00%	8.00%	0.0074%
Teledyne Technologies Inc	TDY	11,822.25	0.04%	0.00%	8.00%	8.00%	0.0033%
TE Connectivity Ltd	TEL	31,613.23	0.11%	2.00%	4.50%	6.55%	0.0073%
Truist Financial Corp	TFC	51,028.35	0.18%	4.75%	3.50%	8.33%	0.0151%
Teleflex Inc	TFX	17,465.33	0.06%	0.36%	15.00%	15.39%	0.0095%
Target Corp	TGT	76,342.78	0.27%	1.78%	9.50%	11.36%	0.0307%
Tiffany & Co	TIF	14,752.53	0.05%	1.91%	9.50%	11.50%	0.0060%
TJX Cos Inc/The	TJX	63,798.93	0.23%	0.00%	12.00%	12.00%	0.0271%
Thermo Fisher Scientific Inc	TMO	168,382.50	0.60%	0.21%	13.50%	13.72%	0.0818%
T-Mobile US Inc	TMUS	143,766.40	0.51%	0.00%	14.00%	14.00%	0.0712%
Tapestry Inc	TPR	4,100.09	0.01%	0.00%	0.50%	0.50%	0.0001%
T Rowe Price Group Inc	TROW	30,913.77	0.11%	2.72%	8.00%	10.83%	0.0118%
Travelers Cos Inc/The	TRV	28,748.33	0.10%	3.00%	9.50%	12.64%	0.0129%
Tractor Supply Co	TSCO	17,964.91	0.06%	1.04%	9.50%	10.59%	0.0067%
Tyson Foods Inc	TSN	23,159.25	0.08%	2.74%	5.50%	8.32%	0.0068%
Trane Technologies PLC	TT	28,790.00	N/A	1.76%	N/A	N/A	N/A
Take-Two Interactive Software Inc	TTWO	20,041.47	0.07%	0.00%	14.00%	14.00%	0.0099%
Twitter Inc	TWTR	32,470.70	0.11%	0.00%	25.50%	25.50%	0.0293%
Texas Instruments Inc	TXN	130,425.90	0.46%	2.53%	2.50%	5.06%	0.0234%
Textron Inc	TXT	8,851.42	0.03%	0.21%	8.50%	8.72%	0.0027%
Tyler Technologies Inc	TYL	16,554.73	0.06%	0.00%	10.50%	10.50%	0.0062%
Under Armour Inc	UAA	4,488.13	0.02%	0.00%	11.00%	11.00%	0.0017%
United Airlines Holdings Inc	UAL	9,966.13	0.04%	0.00%	2.00%	2.00%	0.0007%
UDR Inc	UDR	9,952.71	0.04%	4.26%	11.50%	16.00%	0.0056%
Universal Health Services Inc	UHS	9,200.95	0.03%	0.00%	11.00%	11.00%	0.0036%
Ulta Beauty Inc	ULTA	12,433.87	0.04%	0.00%	7.00%	7.00%	0.0031%
UnitedHealth Group Inc	UNH	293,379.00	1.04%	1.62%	12.00%	13.72%	0.1424%
Unum Group	UNM	3,738.02	0.01%	6.21%	4.50%	10.85%	0.0014%
Union Pacific Corp	UNP	131,887.10	0.47%	2.00%	10.50%	12.61%	0.0588%
United Parcel Service Inc	UPS	137,067.10	0.49%	2.54%	5.50%	8.11%	0.0393%

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 20200051-GU**  
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**EXHIBIT NO. (DWD-1)**  
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United Rentals Inc	URI	12,800.51	0.05%	0.00%	7.00%	7.00%	0.0032%
US Bancorp	USB	54,559.82	0.19%	4.64%	3.50%	8.22%	0.0159%
Visa Inc	V	408,535.20	1.45%	0.59%	14.50%	15.13%	0.2188%
Varian Medical Systems Inc	VAR	15,657.53	0.06%	0.00%	13.50%	13.50%	0.0075%
VF Corp	VFC	24,960.40	0.09%	3.00%	7.00%	10.11%	0.0089%
ViacomCBS Inc	VIAC	17,180.24	0.06%	3.44%	8.00%	11.58%	0.0070%
Valero Energy Corp	VLO	21,896.34	0.08%	7.30%	5.00%	12.48%	0.0097%
Vulcan Materials Co	VMC	16,276.29	0.06%	1.11%	12.50%	13.68%	0.0079%
Vornado Realty Trust	VNO	6,835.56	0.02%	5.93%	-20.00%	-14.66%	-0.0035%
Verisk Analytics Inc	VRSK	30,295.35	0.11%	0.59%	10.50%	11.12%	0.0119%
VeriSign Inc	VRSN	23,980.95	0.08%	0.00%	9.50%	9.50%	0.0081%
Vertex Pharmaceuticals Inc	VRTX	70,569.03	0.25%	0.00%	32.00%	32.00%	0.0799%
Ventas Inc	VTR	15,106.30	0.05%	4.44%	4.50%	9.04%	0.0048%
Verizon Communications Inc	VZ	246,048.70	0.87%	4.19%	4.00%	8.27%	0.0721%
Westinghouse Air Brake Technologies Corp	WAB	12,704.43	0.04%	0.72%	10.50%	11.26%	0.0051%
Waters Corp	WAT	13,379.43	0.05%	0.00%	10.50%	10.50%	0.0050%
Walgreens Boots Alliance Inc	WBA	34,924.54	0.12%	4.84%	6.00%	10.99%	0.0136%
Western Digital Corp	WDC	10,290.00	0.04%	0.00%	0.50%	0.50%	0.0002%
WEC Energy Group Inc	WEC	29,032.63	0.10%	2.85%	6.00%	8.94%	0.0092%
Welltower Inc	WELL	22,913.02	0.08%	4.37%	6.00%	10.50%	0.0085%
Wells Fargo & Co	WFC	99,034.20	N/A	1.66%	N/A	N/A	N/A
Whirlpool Corp	WHR	11,156.28	0.04%	2.67%	2.00%	4.70%	0.0019%
Willis Towers Watson PLC	WLTW	25,954.76	0.09%	1.35%	11.50%	12.93%	0.0119%
Waste Management Inc	WM	48,084.48	0.17%	1.91%	5.50%	7.46%	0.0127%
Williams Cos Inc/The	WMB	25,533.65	0.09%	7.60%	12.00%	20.06%	0.0181%
Walmart Inc	WMT	370,142.40	1.31%	1.67%	7.00%	8.73%	0.1143%
W R Berkley Corp	WRB	10,949.87	0.04%	0.78%	10.00%	10.82%	0.0042%
Westrock Co	WRK	7,925.13	0.03%	2.62%	5.00%	7.69%	0.0022%
West Pharmaceutical Services Inc	WST	20,229.32	0.07%	0.23%	16.00%	16.25%	0.0116%
Western Union Co/The	WU	9,822.90	0.03%	3.77%	6.00%	9.88%	0.0034%
Weyerhaeuser Co	WY	21,909.93	0.08%	0.00%	17.50%	17.50%	0.0136%
Wynn Resorts Ltd	WYNN	9,147.38	0.03%	0.00%	10.00%	10.00%	0.0032%
Xcel Energy Inc	XEL	35,782.22	0.13%	2.60%	6.00%	8.68%	0.0110%
Xilinx Inc	XLNX	25,534.39	0.09%	1.45%	8.00%	9.51%	0.0086%
Exxon Mobil Corp	XOM	169,162.30	0.60%	8.70%	4.50%	13.40%	0.0802%
DENTSPLY SIRONA Inc	XRAY	9,506.95	0.03%	0.92%	7.50%	8.45%	0.0028%
Xerox Holdings Corp	XRX	4,002.53	0.01%	5.32%	7.50%	13.02%	0.0018%
Xylem Inc/NY	XYL	14,526.00	0.05%	1.29%	8.50%	9.84%	0.0051%
Yum! Brands Inc	YUM	28,694.33	0.10%	1.97%	9.50%	11.56%	0.0117%
Zimmer Biomet Holdings Inc	ZBH	28,310.12	0.10%	0.70%	6.00%	6.72%	0.0067%
Zebra Technologies Corp	ZBRA	15,183.19	0.05%	0.00%	11.00%	11.00%	0.0059%
Zions Bancorp NA	ZION	5,293.21	0.02%	4.21%	3.50%	7.78%	0.0015%
Zoetis Inc	ZTS	75,885.84	0.27%	0.50%	12.00%	12.53%	0.0337%
Total Market Capitalization:		28,253,358.54					13.83%

Notes:

- [1] Equals sum of Col. [9]  
[2] Source: Bloomberg Professional  
[3] Equals [1] - [2]  
[4] Source: Value Line  
[5] Equals weight in S&P 500 based on market capitalization  
[6] Source: Value Line  
[7] Source: Value Line  
[8] Equals ([6] x (1 + (0.5 x [7]))) + [7]  
[9] Equals Col. [5] x Col. [8]

Bloomberg and Value Line Beta Coefficients

Company	Ticker	[1]	[2]
		Bloomberg	Value Line
Atmos Energy Corporation	ATO	0.853	0.800
New Jersey Resources Corporation	NJR	0.921	0.900
Northwest Natural Holding Company	NWN	0.833	0.800
ONE Gas, Inc.	OGS	0.931	0.800
South Jersey Industries, Inc.	SJI	0.961	1.000
Southwest Gas Holdings, Inc.	SWX	1.036	0.900
Spire Inc.	SR	0.920	0.800
Mean		0.922	0.857

Notes:

[1] Source: Bloomberg Professional

[2] Source: Value Line

Capital Asset Pricing Model Results  
Bloomberg and Value Line Derived Market Risk Premium

[1]	[2]	[3]		[4]		[5]		[6]		[7]		[8]	
		Risk-Free Rate	Average Beta Coefficient	Ex-Ante Market Risk Premium Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
<b>PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT</b>													
Current 30-Year Treasury [9]	1.32%	0.922	12.46%	12.51%	12.81%	12.86%	13.05%	13.10%	13.05%	13.10%	13.05%	13.10%	13.10%
Near Term Projected 30-Year Treasury [10]	1.60%	0.922	12.46%	12.51%	13.09%	13.13%	13.33%	13.38%	13.33%	13.38%	13.33%	13.38%	13.38%
Long-Term Projected 30-Year Treasury [11]	3.40%	0.922	12.46%	12.51%	14.89%	14.93%	15.13%	15.18%	15.13%	15.18%	15.13%	15.18%	15.18%
Mean					13.60%	13.64%	13.84%	13.88%	13.84%	13.88%	13.84%	13.88%	13.88%

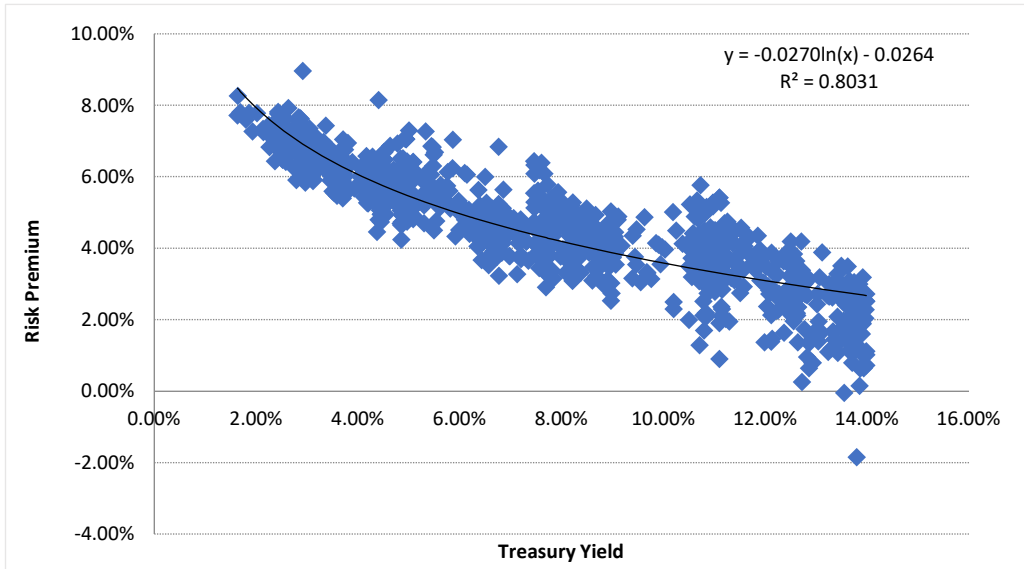
[1]	[2]	[3]		[4]		[5]		[6]		[7]		[8]	
		Risk-Free Rate	Average Beta Coefficient	Ex-Ante Market Risk Premium Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
<b>PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT</b>													
Current 30-Year Treasury [9]	1.32%	0.857	12.46%	12.51%	12.00%	12.04%	12.45%	12.49%	12.45%	12.49%	12.45%	12.49%	12.49%
Near Term Projected 30-Year Treasury [10]	1.60%	0.857	12.46%	12.51%	12.28%	12.32%	12.72%	12.77%	12.72%	12.77%	12.72%	12.77%	12.77%
Long-Term Projected 30-Year Treasury [11]	3.40%	0.857	12.46%	12.51%	14.08%	14.12%	14.52%	14.57%	14.52%	14.57%	14.52%	14.57%	14.57%
Mean					12.79%	12.83%	13.23%	13.27%	13.23%	13.27%	13.23%	13.27%	13.27%

Notes:

- [1] See Notes [9], [10], and [11]
- [2] Source: Exhibit No. (DWD-1) Document No. 5
- [3] Source: Exhibit No. (DWD-1) Document No. 4
- [4] Source: Exhibit No. (DWD-1) Document No. 4
- [5] Equals Col. [1] + (Col. [2] x Col. [3])
- [6] Equals Col. [1] + (Col. [2] x Col. [4])
- [7] Equals Col. [1] + (0.75 x Col. [2] x Col. [3]) + (0.25 x Col. [3])
- [8] Equals Col. [1] + (0.75 x Col. [2] x Col. [4]) + (0.25 x Col. [4])
- [9] Source: Bloomberg Professional
- [10] Source: Blue Chip Financial Forecasts, Vol. 39, No. 9, September 1, 2020, at 2.
- [11] Source: Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 14.

Bond Yield Plus Risk Premium

	[1]	[2]	[3]	[4]	[5]
	Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity
	-2.64%	-2.70%			
Current 30-Year Treasury			1.32%	9.05%	10.38%
Near Term Projected 30-Year Treasury			1.60%	8.54%	10.14%
Long Term Projected 30-Year Treasury			3.40%	6.50%	9.90%



Notes:

- [1] Constant of regression equation
- [2] Slope of regression equation
- [3] Source: Current = Bloomberg Professional  
Near Term Projected = Blue Chip Financial Forecasts, Vol. 39, No. 9, September 1, 2020, at 2.  
Long Term Projected = Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 14.
- [4] Equals [1] + ln([3]) x [2]
- [5] Equals [3] + [4]
- [6] Source: S&P Global Market Intelligence
- [7] Source: S&P Global Market Intelligence
- [8] Source: Bloomberg Professional, equals 187-trading day average (i.e. lag period)
- [9] Equals [7] - [8]

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/3/1980	12.55%	9.39%	3.16%
1/4/1980	13.75%	9.40%	4.35%
1/14/1980	13.20%	9.44%	3.76%
1/18/1980	14.00%	9.47%	4.53%
1/31/1980	12.61%	9.56%	3.05%
2/8/1980	14.50%	9.63%	4.87%
2/14/1980	13.00%	9.67%	3.33%
2/15/1980	13.00%	9.69%	3.31%
2/29/1980	14.00%	9.86%	4.14%
3/5/1980	14.00%	9.91%	4.09%
3/7/1980	13.50%	9.95%	3.55%
3/14/1980	14.00%	10.04%	3.96%
3/27/1980	12.69%	10.20%	2.49%
4/1/1980	14.75%	10.26%	4.49%
4/29/1980	12.50%	10.51%	1.99%
5/7/1980	14.27%	10.56%	3.71%
5/8/1980	13.75%	10.56%	3.19%
5/19/1980	15.50%	10.62%	4.88%
5/27/1980	14.60%	10.65%	3.95%
5/29/1980	16.00%	10.67%	5.33%
6/10/1980	13.78%	10.71%	3.07%
6/25/1980	14.25%	10.74%	3.51%
7/9/1980	14.51%	10.77%	3.74%
7/17/1980	12.90%	10.79%	2.11%
7/18/1980	13.80%	10.79%	3.01%
7/22/1980	14.10%	10.79%	3.31%
7/23/1980	14.19%	10.79%	3.40%
8/1/1980	12.50%	10.80%	1.70%
8/11/1980	14.85%	10.81%	4.04%
8/21/1980	13.03%	10.84%	2.19%
8/28/1980	13.61%	10.87%	2.74%
8/28/1980	14.00%	10.87%	3.13%
9/4/1980	14.00%	10.90%	3.10%
9/24/1980	15.00%	10.98%	4.02%
10/9/1980	14.50%	11.05%	3.45%
10/9/1980	14.50%	11.05%	3.45%
10/24/1980	14.00%	11.09%	2.91%
10/27/1980	15.20%	11.10%	4.10%
10/27/1980	15.20%	11.10%	4.10%
10/28/1980	12.00%	11.10%	0.90%
10/28/1980	13.00%	11.10%	1.90%
10/31/1980	14.50%	11.12%	3.38%
11/4/1980	15.00%	11.12%	3.88%
11/6/1980	14.35%	11.13%	3.22%
11/10/1980	13.25%	11.14%	2.11%
11/17/1980	15.50%	11.15%	4.35%
11/19/1980	13.50%	11.14%	2.36%
12/5/1980	14.60%	11.13%	3.47%
12/8/1980	16.40%	11.13%	5.27%
12/12/1980	15.45%	11.15%	4.30%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/17/1980	14.40%	11.16%	3.24%
12/17/1980	14.20%	11.16%	3.04%
12/18/1980	14.00%	11.16%	2.84%
12/22/1980	13.45%	11.16%	2.29%
12/26/1980	14.00%	11.15%	2.85%
12/30/1980	14.50%	11.14%	3.36%
12/31/1980	14.56%	11.14%	3.42%
1/7/1981	14.30%	11.13%	3.17%
1/12/1981	14.95%	11.14%	3.81%
1/26/1981	15.25%	11.20%	4.05%
1/30/1981	13.25%	11.23%	2.02%
2/11/1981	14.50%	11.33%	3.17%
2/20/1981	14.50%	11.40%	3.10%
3/12/1981	15.65%	11.60%	4.05%
3/25/1981	15.30%	11.74%	3.56%
4/1/1981	15.30%	11.82%	3.48%
4/9/1981	15.00%	11.91%	3.09%
4/29/1981	13.50%	12.12%	1.38%
4/29/1981	14.25%	12.12%	2.13%
4/30/1981	15.00%	12.14%	2.86%
4/30/1981	13.60%	12.14%	1.46%
5/21/1981	14.00%	12.37%	1.63%
6/3/1981	14.67%	12.46%	2.21%
6/22/1981	16.00%	12.57%	3.43%
6/25/1981	14.75%	12.60%	2.15%
7/2/1981	14.00%	12.64%	1.36%
7/10/1981	16.00%	12.69%	3.31%
7/14/1981	16.90%	12.71%	4.19%
7/21/1981	15.78%	12.78%	3.00%
7/27/1981	13.77%	12.82%	0.95%
7/27/1981	15.50%	12.82%	2.68%
7/31/1981	14.20%	12.86%	1.34%
7/31/1981	13.50%	12.86%	0.64%
8/12/1981	13.72%	12.93%	0.79%
8/12/1981	13.72%	12.93%	0.79%
8/12/1981	14.41%	12.93%	1.48%
8/25/1981	15.45%	13.02%	2.43%
8/27/1981	14.43%	13.04%	1.39%
8/28/1981	15.00%	13.05%	1.95%
9/23/1981	14.34%	13.24%	1.10%
9/24/1981	16.25%	13.26%	2.99%
9/29/1981	14.50%	13.31%	1.19%
9/30/1981	15.94%	13.32%	2.62%
10/2/1981	14.80%	13.36%	1.44%
10/12/1981	16.25%	13.43%	2.82%
10/20/1981	15.25%	13.50%	1.75%
10/20/1981	16.50%	13.50%	3.00%
10/20/1981	17.00%	13.50%	3.50%
10/23/1981	15.50%	13.54%	1.96%
10/26/1981	13.50%	13.56%	-0.06%



[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/29/1981	16.50%	13.60%	2.90%
11/4/1981	15.33%	13.62%	1.71%
11/6/1981	15.17%	13.64%	1.53%
11/12/1981	15.00%	13.65%	1.35%
11/25/1981	16.10%	13.66%	2.44%
11/25/1981	16.10%	13.66%	2.44%
11/25/1981	15.25%	13.66%	1.59%
11/30/1981	16.75%	13.66%	3.09%
12/1/1981	15.70%	13.66%	2.04%
12/1/1981	16.00%	13.66%	2.34%
12/15/1981	15.81%	13.69%	2.12%
12/17/1981	14.75%	13.70%	1.05%
12/22/1981	16.00%	13.72%	2.28%
12/22/1981	15.70%	13.72%	1.98%
12/30/1981	16.00%	13.74%	2.26%
12/30/1981	16.25%	13.74%	2.51%
1/4/1982	15.50%	13.75%	1.75%
1/14/1982	11.95%	13.80%	-1.85%
1/25/1982	16.25%	13.84%	2.41%
1/27/1982	16.84%	13.85%	2.99%
1/31/1982	14.00%	13.86%	0.14%
2/2/1982	16.24%	13.86%	2.38%
2/8/1982	15.50%	13.87%	1.63%
2/9/1982	14.95%	13.88%	1.07%
2/9/1982	15.75%	13.88%	1.87%
2/11/1982	16.00%	13.89%	2.11%
3/1/1982	15.96%	13.91%	2.05%
3/3/1982	15.00%	13.91%	1.09%
3/8/1982	17.10%	13.92%	3.18%
3/26/1982	16.00%	13.97%	2.03%
3/31/1982	16.25%	13.98%	2.27%
4/1/1982	16.50%	13.98%	2.52%
4/6/1982	15.00%	13.99%	1.01%
4/9/1982	16.50%	13.99%	2.51%
4/12/1982	15.10%	13.99%	1.11%
4/12/1982	16.70%	13.99%	2.71%
4/18/1982	14.70%	13.99%	0.71%
4/27/1982	15.00%	13.97%	1.03%
5/10/1982	14.57%	13.94%	0.63%
5/14/1982	15.80%	13.92%	1.88%
5/20/1982	15.82%	13.91%	1.91%
5/21/1982	15.50%	13.90%	1.60%
5/25/1982	16.25%	13.90%	2.35%
6/2/1982	14.50%	13.87%	0.63%
6/7/1982	16.00%	13.85%	2.15%
6/23/1982	15.50%	13.81%	1.69%
6/25/1982	16.50%	13.81%	2.69%
7/1/1982	16.00%	13.79%	2.21%
7/1/1982	15.55%	13.79%	1.76%
7/2/1982	15.10%	13.79%	1.31%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/13/1982	16.80%	13.75%	3.05%
7/22/1982	14.50%	13.71%	0.79%
7/28/1982	16.10%	13.68%	2.42%
7/30/1982	14.82%	13.66%	1.16%
8/4/1982	15.58%	13.64%	1.94%
8/6/1982	16.50%	13.63%	2.87%
8/11/1982	17.11%	13.62%	3.49%
8/25/1982	16.00%	13.59%	2.41%
8/30/1982	16.25%	13.58%	2.67%
9/3/1982	15.50%	13.57%	1.93%
9/9/1982	16.04%	13.55%	2.49%
9/15/1982	16.04%	13.52%	2.52%
9/17/1982	15.25%	13.51%	1.74%
9/29/1982	14.50%	13.43%	1.07%
9/30/1982	16.50%	13.42%	3.08%
9/30/1982	16.70%	13.42%	3.28%
9/30/1982	15.50%	13.42%	2.08%
9/30/1982	14.74%	13.42%	1.32%
10/1/1982	16.50%	13.41%	3.09%
10/8/1982	15.00%	13.33%	1.67%
10/15/1982	15.90%	13.26%	2.64%
10/19/1982	15.90%	13.22%	2.68%
10/27/1982	17.00%	13.12%	3.88%
10/28/1982	14.75%	13.11%	1.64%
11/2/1982	16.25%	13.07%	3.18%
11/4/1982	15.75%	13.03%	2.72%
11/5/1982	14.73%	13.01%	1.72%
11/17/1982	16.00%	12.86%	3.14%
11/23/1982	15.50%	12.79%	2.71%
11/24/1982	16.02%	12.77%	3.25%
11/24/1982	14.50%	12.77%	1.73%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	16.10%	12.72%	3.38%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	12.98%	12.72%	0.26%
11/30/1982	15.65%	12.72%	2.93%
11/30/1982	16.00%	12.72%	3.28%
12/3/1982	15.33%	12.68%	2.65%
12/8/1982	15.75%	12.63%	3.12%
12/13/1982	16.00%	12.58%	3.42%
12/14/1982	16.40%	12.57%	3.83%
12/17/1982	16.25%	12.52%	3.73%
12/20/1982	15.00%	12.51%	2.49%
12/21/1982	15.70%	12.49%	3.21%
12/28/1982	15.25%	12.42%	2.83%
12/28/1982	15.25%	12.42%	2.83%
12/29/1982	16.25%	12.41%	3.84%
12/29/1982	16.25%	12.41%	3.84%
1/11/1983	15.90%	12.26%	3.64%
1/12/1983	15.50%	12.24%	3.26%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/18/1983	15.00%	12.18%	2.82%
1/24/1983	16.00%	12.13%	3.87%
1/24/1983	15.50%	12.13%	3.37%
1/28/1983	14.90%	12.08%	2.82%
1/31/1983	15.00%	12.07%	2.93%
2/10/1983	15.00%	11.97%	3.03%
2/25/1983	15.70%	11.84%	3.86%
3/2/1983	15.25%	11.79%	3.46%
3/16/1983	16.00%	11.62%	4.38%
3/21/1983	14.96%	11.57%	3.39%
3/23/1983	15.40%	11.53%	3.87%
3/23/1983	16.10%	11.53%	4.57%
3/24/1983	15.00%	11.51%	3.49%
4/12/1983	13.25%	11.30%	1.95%
4/29/1983	15.05%	11.09%	3.96%
5/3/1983	15.40%	11.06%	4.34%
5/9/1983	15.50%	11.00%	4.50%
5/19/1983	14.85%	10.90%	3.95%
5/31/1983	14.00%	10.84%	3.16%
6/2/1983	14.50%	10.82%	3.68%
6/7/1983	14.50%	10.80%	3.70%
6/9/1983	14.85%	10.79%	4.06%
6/20/1983	14.15%	10.74%	3.41%
6/20/1983	16.50%	10.74%	5.76%
6/27/1983	14.50%	10.71%	3.79%
6/30/1983	14.80%	10.70%	4.10%
6/30/1983	15.90%	10.70%	5.20%
7/1/1983	14.80%	10.70%	4.10%
7/5/1983	15.00%	10.69%	4.31%
7/8/1983	15.50%	10.69%	4.81%
7/19/1983	15.10%	10.70%	4.40%
7/19/1983	15.00%	10.70%	4.30%
8/18/1983	15.30%	10.81%	4.49%
8/19/1983	15.79%	10.82%	4.97%
8/29/1983	16.00%	10.85%	5.15%
8/31/1983	15.25%	10.87%	4.38%
8/31/1983	14.75%	10.87%	3.88%
9/8/1983	14.75%	10.89%	3.86%
9/16/1983	15.51%	10.93%	4.58%
9/26/1983	14.50%	10.96%	3.54%
9/28/1983	14.25%	10.97%	3.28%
9/30/1983	16.15%	10.98%	5.17%
9/30/1983	16.25%	10.98%	5.27%
10/1/1983	16.25%	10.98%	5.27%
10/13/1983	15.52%	11.02%	4.50%
10/19/1983	15.20%	11.04%	4.16%
10/26/1983	14.75%	11.06%	3.69%
10/27/1983	15.33%	11.07%	4.26%
10/27/1983	14.88%	11.07%	3.81%
11/9/1983	14.82%	11.10%	3.72%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/9/1983	16.51%	11.10%	5.41%
11/9/1983	16.51%	11.10%	5.41%
12/1/1983	14.50%	11.17%	3.33%
12/8/1983	15.90%	11.20%	4.70%
12/9/1983	15.30%	11.21%	4.09%
12/12/1983	14.50%	11.22%	3.28%
12/12/1983	15.50%	11.22%	4.28%
12/20/1983	16.00%	11.26%	4.74%
12/20/1983	15.40%	11.26%	4.14%
12/22/1983	15.75%	11.27%	4.48%
12/29/1983	15.00%	11.30%	3.70%
12/30/1983	15.00%	11.30%	3.70%
1/10/1984	15.90%	11.34%	4.56%
1/13/1984	15.50%	11.36%	4.14%
1/18/1984	15.53%	11.38%	4.15%
1/26/1984	15.90%	11.42%	4.48%
2/14/1984	14.25%	11.51%	2.74%
2/28/1984	14.50%	11.58%	2.92%
3/20/1984	16.00%	11.70%	4.30%
3/23/1984	15.50%	11.72%	3.78%
4/9/1984	15.20%	11.81%	3.39%
4/18/1984	16.20%	11.86%	4.34%
4/27/1984	15.85%	11.90%	3.95%
5/15/1984	13.35%	11.99%	1.36%
5/16/1984	15.00%	12.00%	3.00%
5/22/1984	14.40%	12.04%	2.36%
6/13/1984	15.50%	12.18%	3.32%
7/10/1984	16.00%	12.37%	3.63%
8/7/1984	16.69%	12.51%	4.18%
8/9/1984	15.33%	12.51%	2.82%
8/17/1984	14.82%	12.54%	2.28%
8/21/1984	14.64%	12.54%	2.10%
8/27/1984	14.52%	12.56%	1.96%
8/28/1984	14.75%	12.57%	2.18%
8/30/1984	15.60%	12.58%	3.02%
9/12/1984	15.90%	12.60%	3.30%
9/12/1984	15.60%	12.60%	3.00%
9/25/1984	16.25%	12.61%	3.64%
10/2/1984	14.80%	12.62%	2.18%
10/9/1984	14.75%	12.63%	2.12%
10/10/1984	15.50%	12.63%	2.87%
10/18/1984	15.00%	12.65%	2.35%
10/24/1984	15.50%	12.65%	2.85%
11/7/1984	15.00%	12.64%	2.36%
11/20/1984	15.92%	12.63%	3.29%
11/30/1984	15.50%	12.60%	2.90%
12/18/1984	15.00%	12.55%	2.45%
12/20/1984	15.00%	12.54%	2.46%
12/28/1984	15.75%	12.51%	3.24%
12/28/1984	16.25%	12.51%	3.74%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/2/1985	16.00%	12.50%	3.50%
1/31/1985	14.75%	12.37%	2.38%
2/7/1985	14.85%	12.33%	2.52%
2/15/1985	15.00%	12.27%	2.73%
2/20/1985	14.50%	12.25%	2.25%
2/22/1985	14.86%	12.25%	2.61%
3/14/1985	15.50%	12.16%	3.34%
3/28/1985	14.80%	12.08%	2.72%
4/9/1985	15.50%	12.02%	3.48%
4/16/1985	15.70%	11.96%	3.74%
6/10/1985	15.75%	11.58%	4.17%
6/26/1985	14.82%	11.46%	3.36%
7/9/1985	15.00%	11.38%	3.62%
7/26/1985	14.50%	11.26%	3.24%
8/29/1985	14.50%	11.11%	3.39%
8/30/1985	14.38%	11.11%	3.27%
9/12/1985	15.25%	11.07%	4.18%
9/23/1985	15.30%	11.03%	4.27%
9/25/1985	14.50%	11.02%	3.48%
9/26/1985	13.80%	11.02%	2.78%
9/26/1985	14.50%	11.02%	3.48%
10/25/1985	15.25%	10.91%	4.34%
11/8/1985	12.94%	10.85%	2.09%
11/20/1985	14.90%	10.81%	4.09%
11/25/1985	13.30%	10.79%	2.51%
12/6/1985	12.00%	10.71%	1.29%
12/11/1985	14.90%	10.68%	4.22%
12/20/1985	15.00%	10.59%	4.41%
12/20/1985	14.88%	10.59%	4.29%
12/20/1985	15.00%	10.59%	4.41%
12/30/1985	15.75%	10.53%	5.22%
12/31/1985	14.00%	10.51%	3.49%
12/31/1985	14.50%	10.51%	3.99%
1/17/1986	14.50%	10.38%	4.12%
2/11/1986	12.50%	10.20%	2.30%
2/12/1986	15.20%	10.19%	5.01%
3/11/1986	14.00%	9.98%	4.02%
4/2/1986	12.90%	9.76%	3.14%
4/28/1986	13.01%	9.47%	3.54%
5/21/1986	13.25%	9.18%	4.07%
5/28/1986	14.00%	9.12%	4.88%
5/29/1986	13.90%	9.10%	4.80%
6/2/1986	13.00%	9.08%	3.92%
6/11/1986	14.00%	8.97%	5.03%
6/13/1986	13.55%	8.94%	4.61%
6/27/1986	11.88%	8.77%	3.11%
7/14/1986	12.60%	8.59%	4.01%
7/30/1986	13.30%	8.38%	4.92%
8/14/1986	13.50%	8.22%	5.28%
9/5/1986	13.30%	8.02%	5.28%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/23/1986	12.75%	7.91%	4.84%
10/30/1986	13.00%	7.67%	5.33%
10/31/1986	13.75%	7.66%	6.09%
11/10/1986	14.00%	7.61%	6.39%
11/19/1986	13.75%	7.56%	6.19%
11/25/1986	13.15%	7.54%	5.61%
12/22/1986	13.80%	7.47%	6.33%
12/30/1986	13.90%	7.47%	6.43%
1/20/1987	12.75%	7.47%	5.28%
1/23/1987	13.55%	7.47%	6.08%
1/27/1987	12.16%	7.47%	4.69%
2/13/1987	12.60%	7.47%	5.13%
2/24/1987	12.00%	7.47%	4.53%
3/30/1987	12.20%	7.46%	4.74%
3/31/1987	13.00%	7.47%	5.53%
5/5/1987	12.85%	7.60%	5.25%
5/28/1987	13.50%	7.73%	5.77%
6/15/1987	13.20%	7.80%	5.40%
6/30/1987	12.60%	7.85%	4.75%
7/10/1987	12.90%	7.88%	5.02%
7/27/1987	13.50%	7.93%	5.57%
8/25/1987	11.40%	8.09%	3.31%
9/18/1987	13.00%	8.27%	4.73%
10/20/1987	12.60%	8.55%	4.05%
10/20/1987	12.98%	8.55%	4.43%
11/12/1987	12.75%	8.68%	4.07%
11/13/1987	12.75%	8.68%	4.07%
11/24/1987	12.50%	8.73%	3.77%
12/8/1987	12.50%	8.81%	3.69%
12/22/1987	12.00%	8.90%	3.10%
12/31/1987	13.25%	8.94%	4.31%
12/31/1987	12.85%	8.94%	3.91%
1/15/1988	13.15%	8.99%	4.16%
1/20/1988	12.75%	8.99%	3.76%
1/29/1988	13.20%	8.99%	4.21%
2/4/1988	12.60%	8.99%	3.61%
3/23/1988	13.00%	8.95%	4.05%
5/27/1988	13.18%	9.02%	4.16%
6/14/1988	13.50%	9.00%	4.50%
6/17/1988	11.72%	8.99%	2.73%
6/24/1988	11.50%	8.97%	2.53%
7/1/1988	12.75%	8.95%	3.80%
7/8/1988	12.00%	8.93%	3.07%
7/18/1988	12.00%	8.91%	3.09%
7/20/1988	13.40%	8.90%	4.50%
8/8/1988	12.74%	8.90%	3.84%
9/20/1988	12.90%	8.93%	3.97%
9/26/1988	12.40%	8.93%	3.47%
9/27/1988	13.65%	8.93%	4.72%
9/30/1988	13.25%	8.94%	4.31%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/13/1988	13.10%	8.93%	4.17%
10/21/1988	12.80%	8.94%	3.86%
10/25/1988	13.25%	8.94%	4.31%
10/26/1988	13.50%	8.94%	4.56%
10/27/1988	12.95%	8.94%	4.01%
10/28/1988	13.00%	8.95%	4.05%
11/15/1988	12.00%	8.98%	3.02%
11/29/1988	12.75%	9.01%	3.74%
12/19/1988	13.00%	9.05%	3.95%
12/21/1988	12.90%	9.05%	3.85%
12/22/1988	13.50%	9.05%	4.45%
1/26/1989	12.60%	9.06%	3.54%
1/27/1989	13.00%	9.06%	3.94%
2/8/1989	13.37%	9.05%	4.32%
3/8/1989	13.00%	9.04%	3.96%
5/4/1989	13.00%	9.04%	3.96%
6/8/1989	13.50%	8.96%	4.54%
7/19/1989	11.80%	8.84%	2.96%
7/25/1989	12.80%	8.82%	3.98%
7/31/1989	13.00%	8.81%	4.19%
8/14/1989	12.50%	8.76%	3.74%
8/22/1989	12.80%	8.73%	4.07%
8/23/1989	12.90%	8.72%	4.18%
9/21/1989	12.10%	8.62%	3.48%
10/6/1989	13.00%	8.58%	4.42%
10/17/1989	12.41%	8.54%	3.87%
10/18/1989	13.25%	8.54%	4.71%
10/20/1989	12.90%	8.53%	4.37%
10/31/1989	13.60%	8.50%	5.10%
11/3/1989	12.93%	8.48%	4.45%
11/5/1989	13.20%	8.48%	4.72%
11/9/1989	12.60%	8.45%	4.15%
11/9/1989	13.00%	8.45%	4.55%
11/28/1989	12.75%	8.37%	4.38%
12/7/1989	13.25%	8.32%	4.93%
12/15/1989	13.00%	8.28%	4.72%
12/20/1989	12.90%	8.26%	4.64%
12/21/1989	12.80%	8.25%	4.55%
12/21/1989	12.90%	8.25%	4.65%
12/27/1989	12.50%	8.23%	4.27%
1/9/1990	13.00%	8.19%	4.81%
1/18/1990	12.50%	8.16%	4.34%
1/26/1990	12.10%	8.14%	3.96%
3/21/1990	12.80%	8.15%	4.65%
3/28/1990	13.00%	8.16%	4.84%
4/5/1990	12.20%	8.17%	4.03%
4/12/1990	13.25%	8.19%	5.06%
4/30/1990	12.45%	8.24%	4.21%
5/31/1990	12.40%	8.31%	4.09%
6/15/1990	13.20%	8.33%	4.87%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/27/1990	12.90%	8.34%	4.56%
6/29/1990	13.25%	8.35%	4.90%
7/6/1990	12.10%	8.36%	3.74%
7/19/1990	11.70%	8.38%	3.32%
8/31/1990	12.50%	8.53%	3.97%
8/31/1990	12.50%	8.53%	3.97%
9/13/1990	12.50%	8.58%	3.92%
9/18/1990	12.75%	8.60%	4.15%
9/20/1990	12.50%	8.61%	3.89%
10/2/1990	13.00%	8.65%	4.35%
10/17/1990	11.90%	8.68%	3.22%
10/31/1990	12.95%	8.70%	4.25%
11/9/1990	13.25%	8.70%	4.55%
11/19/1990	13.00%	8.70%	4.30%
11/21/1990	12.50%	8.70%	3.80%
11/21/1990	12.10%	8.70%	3.40%
11/28/1990	12.75%	8.70%	4.05%
11/29/1990	12.75%	8.70%	4.05%
12/18/1990	13.10%	8.68%	4.42%
12/20/1990	12.50%	8.67%	3.83%
12/21/1990	13.60%	8.67%	4.93%
12/21/1990	13.00%	8.67%	4.33%
12/21/1990	12.50%	8.67%	3.83%
1/3/1991	13.02%	8.66%	4.36%
1/16/1991	13.25%	8.63%	4.62%
1/25/1991	11.70%	8.61%	3.09%
2/15/1991	12.70%	8.56%	4.14%
2/15/1991	12.80%	8.56%	4.24%
4/3/1991	13.00%	8.51%	4.49%
4/30/1991	12.45%	8.48%	3.97%
4/30/1991	13.00%	8.48%	4.52%
6/25/1991	11.70%	8.34%	3.36%
6/28/1991	12.50%	8.34%	4.16%
7/1/1991	11.70%	8.34%	3.36%
7/19/1991	12.10%	8.31%	3.79%
7/19/1991	12.30%	8.31%	3.99%
7/22/1991	12.90%	8.30%	4.60%
8/15/1991	12.25%	8.28%	3.97%
8/29/1991	13.30%	8.26%	5.04%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.40%	8.23%	4.17%
10/3/1991	11.30%	8.22%	3.08%
10/9/1991	11.70%	8.21%	3.49%
10/15/1991	13.40%	8.20%	5.20%
11/1/1991	12.90%	8.20%	4.70%
11/8/1991	12.75%	8.20%	4.55%
11/26/1991	12.00%	8.18%	3.82%
11/26/1991	11.60%	8.18%	3.42%
11/27/1991	12.70%	8.18%	4.52%
12/6/1991	12.70%	8.16%	4.54%



[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/10/1991	11.75%	8.15%	3.60%
12/19/1991	12.60%	8.14%	4.46%
12/19/1991	12.80%	8.14%	4.66%
12/30/1991	12.10%	8.11%	3.99%
1/22/1992	12.84%	8.05%	4.79%
1/31/1992	12.00%	8.03%	3.97%
2/20/1992	13.00%	8.00%	5.00%
2/27/1992	11.75%	7.98%	3.77%
3/18/1992	12.50%	7.94%	4.56%
5/15/1992	12.75%	7.86%	4.89%
6/24/1992	12.20%	7.85%	4.35%
6/29/1992	11.00%	7.85%	3.15%
7/14/1992	12.00%	7.83%	4.17%
7/22/1992	11.20%	7.82%	3.38%
8/10/1992	12.10%	7.79%	4.31%
8/26/1992	12.43%	7.75%	4.68%
9/30/1992	11.60%	7.72%	3.88%
10/6/1992	12.25%	7.72%	4.53%
10/13/1992	12.75%	7.71%	5.04%
10/23/1992	11.65%	7.71%	3.94%
10/28/1992	12.25%	7.71%	4.54%
10/29/1992	12.75%	7.70%	5.05%
10/30/1992	11.40%	7.70%	3.70%
11/9/1992	10.60%	7.70%	2.90%
11/25/1992	12.00%	7.68%	4.32%
11/25/1992	11.00%	7.68%	3.32%
12/3/1992	11.85%	7.66%	4.19%
12/16/1992	11.90%	7.64%	4.26%
12/22/1992	12.40%	7.62%	4.78%
12/22/1992	12.30%	7.62%	4.68%
12/30/1992	12.00%	7.61%	4.39%
12/31/1992	12.00%	7.61%	4.39%
1/12/1993	12.00%	7.59%	4.41%
1/12/1993	12.00%	7.59%	4.41%
2/2/1993	11.40%	7.53%	3.87%
2/22/1993	11.60%	7.48%	4.12%
4/23/1993	11.75%	7.27%	4.48%
5/3/1993	11.75%	7.25%	4.50%
5/3/1993	11.50%	7.25%	4.25%
6/3/1993	12.00%	7.20%	4.80%
6/7/1993	11.50%	7.20%	4.30%
6/22/1993	11.75%	7.16%	4.59%
7/21/1993	11.78%	7.06%	4.72%
7/21/1993	11.90%	7.06%	4.84%
7/23/1993	11.50%	7.05%	4.45%
7/29/1993	11.50%	7.03%	4.47%
8/12/1993	10.75%	6.97%	3.78%
8/24/1993	11.50%	6.92%	4.58%
8/31/1993	11.90%	6.88%	5.02%
9/1/1993	11.25%	6.87%	4.38%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/1/1993	11.47%	6.87%	4.60%
9/27/1993	10.50%	6.74%	3.76%
9/29/1993	11.00%	6.72%	4.28%
9/30/1993	11.60%	6.72%	4.88%
10/8/1993	11.50%	6.67%	4.83%
10/14/1993	11.20%	6.65%	4.55%
10/15/1993	11.75%	6.64%	5.11%
10/25/1993	11.55%	6.60%	4.95%
10/28/1993	11.50%	6.58%	4.92%
10/29/1993	11.25%	6.57%	4.68%
10/29/1993	10.20%	6.57%	3.63%
10/29/1993	10.10%	6.57%	3.53%
11/2/1993	10.80%	6.56%	4.24%
11/12/1993	11.80%	6.53%	5.27%
11/23/1993	12.50%	6.51%	5.99%
11/26/1993	11.00%	6.50%	4.50%
12/1/1993	11.45%	6.49%	4.96%
12/16/1993	11.20%	6.45%	4.75%
12/16/1993	10.60%	6.45%	4.15%
12/21/1993	11.30%	6.44%	4.86%
12/22/1993	11.00%	6.44%	4.56%
12/23/1993	10.10%	6.44%	3.66%
1/5/1994	11.50%	6.41%	5.09%
1/10/1994	11.00%	6.40%	4.60%
1/25/1994	12.00%	6.37%	5.63%
2/2/1994	10.40%	6.35%	4.05%
2/9/1994	10.70%	6.34%	4.36%
4/6/1994	11.24%	6.35%	4.89%
4/25/1994	11.00%	6.39%	4.61%
6/16/1994	10.50%	6.63%	3.87%
6/23/1994	10.60%	6.67%	3.93%
7/19/1994	10.70%	6.83%	3.87%
9/29/1994	11.00%	7.20%	3.80%
9/29/1994	10.90%	7.20%	3.70%
10/7/1994	11.87%	7.26%	4.61%
10/18/1994	11.50%	7.32%	4.18%
10/18/1994	11.50%	7.32%	4.18%
10/24/1994	11.00%	7.35%	3.65%
11/22/1994	12.12%	7.52%	4.60%
11/29/1994	11.30%	7.55%	3.75%
12/1/1994	11.00%	7.56%	3.44%
12/8/1994	11.70%	7.59%	4.11%
12/8/1994	11.50%	7.59%	3.91%
12/12/1994	11.82%	7.60%	4.22%
12/14/1994	11.50%	7.61%	3.89%
12/19/1994	11.50%	7.62%	3.88%
4/19/1995	11.00%	7.72%	3.28%
9/11/1995	11.30%	7.16%	4.14%
9/15/1995	10.40%	7.13%	3.27%
9/29/1995	11.50%	7.06%	4.44%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/13/1995	10.76%	6.98%	3.78%
11/7/1995	12.50%	6.86%	5.64%
11/8/1995	11.30%	6.85%	4.45%
11/8/1995	11.10%	6.85%	4.25%
11/17/1995	10.90%	6.81%	4.09%
11/20/1995	11.40%	6.80%	4.60%
11/27/1995	13.60%	6.77%	6.83%
12/14/1995	11.30%	6.68%	4.62%
12/20/1995	11.60%	6.65%	4.95%
1/31/1996	11.30%	6.45%	4.85%
3/11/1996	11.60%	6.40%	5.20%
4/3/1996	11.13%	6.41%	4.72%
4/15/1996	10.50%	6.41%	4.09%
4/17/1996	10.77%	6.40%	4.37%
4/26/1996	10.60%	6.40%	4.20%
5/10/1996	11.00%	6.40%	4.60%
5/13/1996	11.25%	6.41%	4.84%
7/3/1996	11.25%	6.49%	4.76%
7/22/1996	11.25%	6.54%	4.71%
10/3/1996	10.00%	6.77%	3.23%
10/29/1996	11.30%	6.84%	4.46%
11/26/1996	11.30%	6.86%	4.44%
11/27/1996	11.30%	6.86%	4.44%
11/29/1996	11.00%	6.86%	4.14%
12/12/1996	11.96%	6.85%	5.11%
12/17/1996	11.50%	6.85%	4.65%
1/22/1997	11.30%	6.83%	4.47%
1/27/1997	11.25%	6.83%	4.42%
1/31/1997	11.25%	6.83%	4.42%
2/13/1997	11.00%	6.82%	4.18%
2/13/1997	11.80%	6.82%	4.98%
2/20/1997	11.80%	6.81%	4.99%
3/27/1997	10.75%	6.79%	3.96%
4/29/1997	11.70%	6.81%	4.89%
7/17/1997	12.00%	6.77%	5.23%
10/29/1997	10.75%	6.70%	4.05%
10/31/1997	11.25%	6.70%	4.55%
12/24/1997	10.75%	6.53%	4.22%
4/28/1998	10.90%	6.11%	4.79%
4/30/1998	12.20%	6.10%	6.10%
6/30/1998	11.00%	5.94%	5.06%
8/26/1998	10.93%	5.82%	5.11%
9/3/1998	11.40%	5.80%	5.60%
9/15/1998	11.90%	5.77%	6.13%
10/7/1998	11.06%	5.70%	5.36%
10/30/1998	11.40%	5.63%	5.77%
12/10/1998	12.20%	5.52%	6.68%
12/17/1998	12.10%	5.49%	6.61%
2/19/1999	11.15%	5.32%	5.83%
3/1/1999	10.65%	5.31%	5.34%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/1/1999	10.65%	5.31%	5.34%
6/8/1999	11.25%	5.35%	5.90%
11/12/1999	10.25%	5.92%	4.33%
12/14/1999	10.50%	5.99%	4.51%
1/28/2000	10.71%	6.16%	4.55%
2/17/2000	10.60%	6.20%	4.40%
5/25/2000	10.80%	6.19%	4.61%
6/19/2000	11.05%	6.18%	4.87%
6/22/2000	11.25%	6.18%	5.07%
7/17/2000	11.06%	6.15%	4.91%
7/20/2000	12.20%	6.14%	6.06%
8/11/2000	11.00%	6.11%	4.89%
9/27/2000	11.25%	6.00%	5.25%
9/29/2000	11.16%	6.00%	5.16%
10/5/2000	11.30%	5.98%	5.32%
11/28/2000	12.90%	5.87%	7.03%
11/30/2000	12.10%	5.86%	6.24%
2/5/2001	11.50%	5.75%	5.75%
3/15/2001	11.25%	5.66%	5.59%
5/8/2001	10.75%	5.61%	5.14%
10/24/2001	11.00%	5.54%	5.46%
10/24/2001	10.30%	5.54%	4.76%
1/9/2002	10.00%	5.50%	4.50%
1/30/2002	11.00%	5.47%	5.53%
1/31/2002	11.00%	5.47%	5.53%
4/17/2002	11.50%	5.44%	6.06%
4/29/2002	11.00%	5.45%	5.55%
6/11/2002	11.77%	5.48%	6.29%
6/20/2002	12.30%	5.48%	6.82%
8/28/2002	11.00%	5.49%	5.51%
9/11/2002	11.20%	5.45%	5.75%
9/12/2002	12.30%	5.45%	6.85%
10/28/2002	11.30%	5.35%	5.95%
10/30/2002	10.60%	5.34%	5.26%
11/1/2002	12.60%	5.34%	7.26%
11/7/2002	11.40%	5.33%	6.07%
11/8/2002	10.75%	5.33%	5.42%
11/20/2002	10.00%	5.30%	4.70%
11/20/2002	10.50%	5.30%	5.20%
12/4/2002	10.75%	5.27%	5.48%
12/30/2002	11.20%	5.19%	6.01%
1/6/2003	11.25%	5.16%	6.09%
2/28/2003	12.30%	5.01%	7.29%
3/7/2003	9.96%	4.99%	4.97%
3/12/2003	11.40%	4.97%	6.43%
3/20/2003	12.00%	4.95%	7.05%
4/3/2003	12.00%	4.92%	7.08%
5/2/2003	11.40%	4.88%	6.52%
5/15/2003	11.05%	4.87%	6.18%
6/26/2003	11.00%	4.80%	6.20%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/1/2003	11.00%	4.80%	6.20%
7/29/2003	11.71%	4.78%	6.93%
8/22/2003	10.20%	4.81%	5.39%
9/17/2003	9.90%	4.85%	5.05%
9/25/2003	10.25%	4.85%	5.40%
10/17/2003	10.54%	4.87%	5.67%
10/22/2003	10.46%	4.87%	5.59%
10/22/2003	10.71%	4.87%	5.84%
10/30/2003	11.00%	4.88%	6.12%
10/31/2003	10.20%	4.88%	5.32%
10/31/2003	10.75%	4.88%	5.87%
11/10/2003	10.60%	4.89%	5.71%
12/9/2003	10.50%	4.93%	5.57%
12/18/2003	10.50%	4.94%	5.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
1/13/2004	10.25%	4.95%	5.30%
1/13/2004	12.00%	4.95%	7.05%
2/9/2004	11.25%	4.98%	6.27%
3/16/2004	10.90%	5.05%	5.85%
3/16/2004	10.90%	5.05%	5.85%
5/25/2004	10.00%	5.06%	4.94%
6/2/2004	11.22%	5.07%	6.15%
6/30/2004	10.50%	5.10%	5.40%
7/8/2004	10.00%	5.10%	4.90%
7/22/2004	10.25%	5.10%	5.15%
8/26/2004	10.50%	5.10%	5.40%
8/26/2004	10.50%	5.10%	5.40%
9/9/2004	10.40%	5.10%	5.30%
9/21/2004	10.50%	5.09%	5.41%
9/27/2004	10.30%	5.09%	5.21%
9/27/2004	10.50%	5.09%	5.41%
10/20/2004	10.20%	5.08%	5.12%
11/30/2004	10.60%	5.08%	5.52%
12/8/2004	9.90%	5.09%	4.81%
12/21/2004	11.50%	5.09%	6.41%
12/22/2004	11.50%	5.09%	6.41%
12/28/2004	10.25%	5.09%	5.16%
2/18/2005	10.30%	4.95%	5.35%
3/29/2005	11.00%	4.86%	6.14%
4/13/2005	10.60%	4.84%	5.76%
4/28/2005	11.00%	4.80%	6.20%
5/17/2005	10.00%	4.77%	5.23%
6/8/2005	10.18%	4.71%	5.47%
6/10/2005	10.90%	4.71%	6.19%
7/6/2005	10.50%	4.65%	5.85%
7/19/2005	11.50%	4.63%	6.87%
8/11/2005	10.40%	4.60%	5.80%
9/19/2005	9.45%	4.53%	4.92%
9/30/2005	10.51%	4.52%	5.99%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/4/2005	9.90%	4.52%	5.38%
10/4/2005	10.75%	4.52%	6.23%
10/14/2005	10.40%	4.52%	5.88%
10/31/2005	10.25%	4.53%	5.72%
11/2/2005	9.70%	4.53%	5.17%
11/30/2005	10.00%	4.53%	5.47%
12/9/2005	9.70%	4.53%	5.17%
12/12/2005	11.00%	4.53%	6.47%
12/20/2005	10.13%	4.53%	5.60%
12/21/2005	11.00%	4.52%	6.48%
12/21/2005	10.40%	4.52%	5.88%
12/22/2005	10.20%	4.52%	5.68%
12/22/2005	11.00%	4.52%	6.48%
12/28/2005	10.00%	4.52%	5.48%
1/5/2006	11.00%	4.52%	6.48%
1/25/2006	11.20%	4.52%	6.68%
1/25/2006	11.20%	4.52%	6.68%
2/3/2006	10.50%	4.52%	5.98%
2/15/2006	9.50%	4.53%	4.97%
4/26/2006	10.60%	4.65%	5.95%
7/24/2006	9.60%	4.87%	4.73%
7/24/2006	10.00%	4.87%	5.13%
9/20/2006	11.00%	4.93%	6.07%
9/26/2006	10.75%	4.93%	5.82%
10/20/2006	9.80%	4.96%	4.84%
11/2/2006	9.71%	4.97%	4.74%
11/9/2006	10.00%	4.97%	5.03%
11/21/2006	11.00%	4.98%	6.02%
12/5/2006	10.20%	4.97%	5.23%
1/5/2007	10.40%	4.95%	5.45%
1/9/2007	11.00%	4.94%	6.06%
1/11/2007	10.90%	4.94%	5.96%
1/19/2007	10.80%	4.93%	5.87%
1/26/2007	10.00%	4.92%	5.08%
2/8/2007	10.40%	4.91%	5.49%
3/14/2007	10.10%	4.86%	5.24%
3/20/2007	10.25%	4.84%	5.41%
3/21/2007	11.35%	4.84%	6.51%
3/22/2007	10.50%	4.84%	5.66%
3/29/2007	10.00%	4.83%	5.17%
6/13/2007	10.75%	4.81%	5.94%
6/29/2007	10.10%	4.84%	5.26%
6/29/2007	9.53%	4.84%	4.69%
7/3/2007	10.25%	4.85%	5.40%
7/13/2007	9.50%	4.86%	4.64%
7/24/2007	10.40%	4.87%	5.53%
8/1/2007	10.15%	4.88%	5.27%
8/29/2007	10.50%	4.91%	5.59%
9/10/2007	9.71%	4.91%	4.80%
9/19/2007	10.00%	4.91%	5.09%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/25/2007	9.70%	4.92%	4.78%
10/8/2007	10.48%	4.92%	5.56%
10/19/2007	10.50%	4.91%	5.59%
10/25/2007	9.65%	4.91%	4.74%
11/15/2007	10.00%	4.89%	5.11%
11/20/2007	9.90%	4.89%	5.01%
11/27/2007	10.00%	4.88%	5.12%
11/29/2007	10.90%	4.88%	6.02%
12/14/2007	10.80%	4.87%	5.93%
12/18/2007	10.40%	4.86%	5.54%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	10.20%	4.86%	5.34%
12/21/2007	9.10%	4.86%	4.24%
1/8/2008	10.75%	4.83%	5.92%
1/17/2008	10.75%	4.81%	5.94%
1/17/2008	10.75%	4.81%	5.94%
2/5/2008	9.99%	4.78%	5.21%
2/5/2008	10.19%	4.78%	5.41%
2/13/2008	10.20%	4.76%	5.44%
3/31/2008	10.00%	4.63%	5.37%
5/28/2008	10.50%	4.53%	5.97%
6/24/2008	10.00%	4.52%	5.48%
6/27/2008	10.00%	4.52%	5.48%
7/31/2008	10.70%	4.50%	6.20%
7/31/2008	10.82%	4.50%	6.32%
8/27/2008	10.25%	4.50%	5.75%
9/2/2008	10.25%	4.50%	5.75%
9/19/2008	10.70%	4.48%	6.22%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/30/2008	10.20%	4.48%	5.72%
10/3/2008	10.30%	4.48%	5.82%
10/8/2008	10.15%	4.47%	5.68%
10/20/2008	10.06%	4.47%	5.59%
10/24/2008	10.60%	4.46%	6.14%
10/24/2008	10.60%	4.46%	6.14%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/24/2008	10.50%	4.41%	6.09%
12/3/2008	10.39%	4.37%	6.02%
12/24/2008	10.00%	4.26%	5.74%
12/26/2008	10.10%	4.24%	5.86%
12/29/2008	10.20%	4.23%	5.97%
1/13/2009	10.45%	4.14%	6.31%
2/2/2009	10.05%	4.04%	6.01%
3/9/2009	10.30%	3.89%	6.41%
3/25/2009	10.17%	3.84%	6.33%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/2/2009	10.75%	3.81%	6.94%
5/5/2009	10.75%	3.71%	7.04%
5/15/2009	10.20%	3.70%	6.50%
5/29/2009	9.54%	3.70%	5.84%
6/3/2009	10.10%	3.71%	6.39%
6/22/2009	10.00%	3.73%	6.27%
6/29/2009	10.21%	3.74%	6.47%
6/30/2009	9.31%	3.74%	5.57%
7/17/2009	9.26%	3.75%	5.51%
7/17/2009	10.50%	3.75%	6.75%
10/16/2009	10.40%	4.09%	6.31%
10/26/2009	10.10%	4.11%	5.99%
10/28/2009	10.15%	4.12%	6.03%
10/28/2009	10.15%	4.12%	6.03%
10/30/2009	9.95%	4.12%	5.83%
11/20/2009	9.45%	4.18%	5.27%
12/14/2009	10.50%	4.24%	6.26%
12/16/2009	10.75%	4.25%	6.50%
12/17/2009	10.30%	4.26%	6.04%
12/18/2009	10.40%	4.26%	6.14%
12/18/2009	10.50%	4.26%	6.24%
12/18/2009	10.40%	4.26%	6.14%
12/22/2009	10.20%	4.27%	5.93%
12/22/2009	10.40%	4.27%	6.13%
12/28/2009	10.85%	4.29%	6.56%
12/29/2009	10.38%	4.30%	6.08%
1/11/2010	10.24%	4.34%	5.90%
1/21/2010	10.33%	4.37%	5.96%
1/21/2010	10.23%	4.37%	5.86%
1/26/2010	10.40%	4.37%	6.03%
2/10/2010	10.00%	4.39%	5.61%
2/23/2010	10.50%	4.40%	6.10%
3/9/2010	9.60%	4.40%	5.20%
3/24/2010	10.13%	4.42%	5.71%
3/31/2010	10.70%	4.43%	6.27%
4/1/2010	9.50%	4.43%	5.07%
4/2/2010	10.10%	4.44%	5.66%
4/8/2010	10.35%	4.44%	5.91%
4/29/2010	9.40%	4.46%	4.94%
4/29/2010	9.19%	4.46%	4.73%
4/29/2010	9.40%	4.46%	4.94%
5/17/2010	10.55%	4.46%	6.09%
5/24/2010	10.05%	4.46%	5.59%
6/3/2010	11.00%	4.46%	6.54%
6/16/2010	10.00%	4.46%	5.54%
6/18/2010	10.30%	4.46%	5.84%
8/9/2010	12.55%	4.41%	8.14%
8/17/2010	10.10%	4.40%	5.70%
9/16/2010	10.30%	4.31%	5.99%
9/16/2010	9.60%	4.31%	5.29%



[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.00%	4.31%	5.69%
10/21/2010	10.40%	4.20%	6.20%
11/2/2010	9.75%	4.17%	5.58%
11/2/2010	9.75%	4.17%	5.58%
11/3/2010	10.75%	4.17%	6.58%
11/19/2010	10.20%	4.15%	6.05%
12/1/2010	10.00%	4.13%	5.87%
12/6/2010	9.56%	4.12%	5.44%
12/6/2010	10.09%	4.12%	5.97%
12/9/2010	10.25%	4.12%	6.13%
12/14/2010	10.33%	4.11%	6.22%
12/17/2010	10.10%	4.11%	5.99%
12/20/2010	10.10%	4.11%	5.99%
12/23/2010	9.92%	4.10%	5.82%
1/6/2011	10.35%	4.09%	6.26%
1/12/2011	10.30%	4.09%	6.21%
1/13/2011	10.30%	4.09%	6.21%
3/10/2011	10.10%	4.16%	5.94%
3/31/2011	9.45%	4.20%	5.25%
4/18/2011	10.05%	4.23%	5.82%
5/26/2011	10.50%	4.32%	6.18%
6/21/2011	10.00%	4.36%	5.64%
6/29/2011	8.83%	4.38%	4.45%
8/1/2011	9.20%	4.41%	4.79%
9/1/2011	10.10%	4.33%	5.77%
11/14/2011	9.60%	3.93%	5.67%
12/13/2011	9.50%	3.76%	5.74%
12/20/2011	10.00%	3.72%	6.28%
12/22/2011	10.40%	3.70%	6.70%
1/10/2012	9.06%	3.59%	5.47%
1/10/2012	9.45%	3.59%	5.86%
1/10/2012	9.45%	3.59%	5.86%
1/23/2012	10.20%	3.53%	6.67%
1/31/2012	10.00%	3.49%	6.51%
4/24/2012	9.75%	3.16%	6.59%
4/24/2012	9.50%	3.16%	6.34%
5/7/2012	9.80%	3.13%	6.67%
5/22/2012	9.60%	3.10%	6.50%
5/24/2012	9.70%	3.09%	6.61%
6/7/2012	10.30%	3.06%	7.24%
6/15/2012	10.40%	3.05%	7.35%
6/18/2012	9.60%	3.05%	6.55%
7/2/2012	9.75%	3.04%	6.71%
10/24/2012	10.30%	2.92%	7.38%
10/26/2012	9.50%	2.92%	6.58%
10/31/2012	10.00%	2.92%	7.08%
10/31/2012	9.30%	2.92%	6.38%
10/31/2012	9.90%	2.92%	6.98%
11/1/2012	9.45%	2.91%	6.54%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/8/2012	10.10%	2.91%	7.19%
11/9/2012	10.30%	2.90%	7.40%
11/26/2012	10.00%	2.89%	7.11%
11/28/2012	10.40%	2.88%	7.52%
11/28/2012	10.50%	2.88%	7.62%
12/4/2012	10.50%	2.87%	7.63%
12/4/2012	10.00%	2.87%	7.13%
12/20/2012	10.40%	2.84%	7.56%
12/20/2012	10.30%	2.84%	7.46%
12/20/2012	10.10%	2.84%	7.26%
12/20/2012	10.25%	2.84%	7.41%
12/20/2012	10.50%	2.84%	7.66%
12/20/2012	9.50%	2.84%	6.66%
12/26/2012	9.80%	2.83%	6.97%
2/22/2013	9.60%	2.86%	6.74%
3/14/2013	9.30%	2.89%	6.41%
3/27/2013	9.80%	2.92%	6.88%
4/23/2013	9.80%	2.96%	6.84%
5/10/2013	9.25%	2.96%	6.29%
6/13/2013	9.40%	3.01%	6.39%
6/18/2013	9.28%	3.02%	6.26%
6/18/2013	9.28%	3.02%	6.26%
6/25/2013	9.80%	3.04%	6.76%
9/23/2013	9.60%	3.33%	6.27%
11/6/2013	10.20%	3.42%	6.78%
11/13/2013	9.84%	3.44%	6.40%
11/14/2013	10.25%	3.44%	6.81%
11/22/2013	9.50%	3.47%	6.03%
12/5/2013	10.20%	3.50%	6.70%
12/13/2013	9.60%	3.52%	6.08%
12/16/2013	9.73%	3.53%	6.20%
12/17/2013	10.00%	3.53%	6.47%
12/18/2013	9.08%	3.53%	5.55%
12/23/2013	9.72%	3.55%	6.17%
12/30/2013	10.00%	3.57%	6.43%
1/21/2014	9.65%	3.66%	5.99%
1/22/2014	9.18%	3.66%	5.52%
2/20/2014	9.30%	3.71%	5.59%
2/21/2014	9.85%	3.72%	6.13%
2/28/2014	9.55%	3.73%	5.82%
3/16/2014	9.72%	3.74%	5.98%
4/21/2014	9.50%	3.73%	5.77%
4/22/2014	9.80%	3.73%	6.07%
5/8/2014	9.59%	3.71%	5.88%
5/8/2014	9.10%	3.71%	5.39%
6/6/2014	10.40%	3.66%	6.74%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
7/7/2014	9.30%	3.63%	5.67%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/25/2014	9.30%	3.60%	5.70%
7/31/2014	9.90%	3.59%	6.31%
9/4/2014	9.10%	3.50%	5.60%
9/24/2014	9.35%	3.46%	5.89%
9/30/2014	9.75%	3.44%	6.31%
10/29/2014	10.80%	3.37%	7.43%
11/6/2014	10.20%	3.35%	6.85%
11/14/2014	10.20%	3.33%	6.87%
11/14/2014	10.30%	3.33%	6.97%
11/26/2014	10.20%	3.30%	6.90%
12/3/2014	10.00%	3.29%	6.71%
1/13/2015	10.30%	3.16%	7.14%
1/21/2015	9.05%	3.13%	5.92%
1/21/2015	9.05%	3.13%	5.92%
4/9/2015	9.50%	2.88%	6.62%
5/11/2015	9.80%	2.82%	6.98%
6/17/2015	9.00%	2.79%	6.21%
8/21/2015	9.75%	2.78%	6.97%
10/7/2015	9.55%	2.82%	6.73%
10/13/2015	9.75%	2.83%	6.92%
10/15/2015	9.00%	2.84%	6.16%
10/30/2015	9.80%	2.87%	6.93%
11/19/2015	10.00%	2.89%	7.11%
12/3/2015	10.00%	2.91%	7.09%
12/9/2015	9.60%	2.92%	6.68%
12/11/2015	9.90%	2.92%	6.98%
12/18/2015	9.50%	2.94%	6.56%
1/6/2016	9.50%	2.97%	6.53%
1/6/2016	9.50%	2.97%	6.53%
1/28/2016	9.40%	2.97%	6.43%
2/10/2016	9.60%	2.95%	6.65%
2/16/2016	9.50%	2.94%	6.56%
2/29/2016	9.40%	2.92%	6.48%
4/29/2016	9.80%	2.83%	6.97%
5/5/2016	9.49%	2.82%	6.67%
6/1/2016	9.55%	2.80%	6.75%
6/3/2016	9.65%	2.79%	6.86%
6/15/2016	9.00%	2.77%	6.23%
6/15/2016	9.00%	2.77%	6.23%
9/2/2016	9.50%	2.56%	6.94%
9/23/2016	9.75%	2.52%	7.23%
9/27/2016	9.50%	2.51%	6.99%
9/29/2016	9.11%	2.50%	6.61%
10/13/2016	10.20%	2.48%	7.72%
10/28/2016	9.70%	2.47%	7.23%
11/9/2016	9.80%	2.47%	7.33%
11/18/2016	10.00%	2.49%	7.51%
12/9/2016	10.10%	2.51%	7.59%
12/15/2016	9.00%	2.53%	6.47%
12/15/2016	9.00%	2.53%	6.47%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/20/2016	9.75%	2.53%	7.22%
12/22/2016	9.50%	2.54%	6.96%
1/24/2017	9.00%	2.59%	6.41%
2/21/2017	10.55%	2.63%	7.92%
3/1/2017	9.25%	2.65%	6.60%
4/11/2017	9.50%	2.77%	6.73%
4/20/2017	8.70%	2.79%	5.91%
4/28/2017	9.50%	2.81%	6.69%
5/23/2017	9.60%	2.88%	6.72%
6/6/2017	9.70%	2.91%	6.79%
6/22/2017	9.70%	2.93%	6.77%
6/30/2017	9.60%	2.94%	6.66%
7/20/2017	9.55%	2.97%	6.58%
7/31/2017	10.10%	2.98%	7.12%
9/13/2017	9.40%	2.93%	6.47%
9/19/2017	9.70%	2.92%	6.78%
9/22/2017	11.88%	2.92%	8.96%
9/27/2017	10.20%	2.92%	7.28%
10/20/2017	9.60%	2.90%	6.70%
10/26/2017	10.20%	2.90%	7.30%
10/30/2017	10.05%	2.90%	7.15%
12/5/2017	9.50%	2.86%	6.64%
12/7/2017	9.80%	2.86%	6.94%
12/13/2017	9.25%	2.85%	6.40%
12/28/2017	9.50%	2.84%	6.66%
1/31/2018	9.80%	2.83%	6.97%
2/21/2018	9.80%	2.84%	6.96%
2/21/2018	9.80%	2.84%	6.96%
2/28/2018	9.50%	2.85%	6.65%
3/15/2018	9.00%	2.87%	6.13%
3/26/2018	10.19%	2.88%	7.31%
4/26/2018	9.50%	2.91%	6.59%
4/27/2018	9.30%	2.91%	6.39%
5/2/2018	9.50%	2.91%	6.59%
5/3/2018	9.70%	2.91%	6.79%
5/29/2018	9.40%	2.95%	6.45%
6/6/2018	9.80%	2.96%	6.84%
6/14/2018	8.80%	2.97%	5.83%
7/16/2018	9.60%	2.98%	6.62%
7/20/2018	9.40%	2.99%	6.41%
8/24/2018	9.28%	3.02%	6.26%
8/28/2018	10.00%	3.03%	6.97%
9/13/2018	10.00%	3.04%	6.96%
9/14/2018	10.00%	3.05%	6.95%
9/19/2018	9.85%	3.05%	6.80%
9/20/2018	9.80%	3.05%	6.75%
9/26/2018	9.40%	3.06%	6.34%
9/26/2018	10.20%	3.06%	7.14%
9/28/2018	9.50%	3.07%	6.43%
9/28/2018	9.50%	3.07%	6.43%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/5/2018	9.61%	3.08%	6.53%
10/15/2018	9.80%	3.09%	6.71%
10/26/2018	9.40%	3.11%	6.29%
10/29/2018	9.60%	3.11%	6.49%
11/1/2018	9.87%	3.11%	6.76%
11/8/2018	9.70%	3.12%	6.58%
11/8/2018	9.70%	3.12%	6.58%
12/11/2018	9.70%	3.14%	6.56%
12/12/2018	9.30%	3.14%	6.16%
12/13/2018	9.60%	3.14%	6.46%
12/19/2018	9.30%	3.14%	6.16%
12/21/2018	9.35%	3.14%	6.21%
12/24/2018	9.25%	3.14%	6.11%
12/24/2018	9.25%	3.14%	6.11%
1/4/2019	9.80%	3.14%	6.66%
1/18/2019	9.70%	3.14%	6.56%
3/14/2019	9.00%	3.12%	5.88%
3/27/2019	9.70%	3.12%	6.58%
4/30/2019	9.73%	3.11%	6.62%
5/7/2019	9.65%	3.10%	6.55%
5/21/2019	9.80%	3.10%	6.70%
9/4/2019	10.00%	2.76%	7.24%
9/26/2019	9.90%	2.69%	7.21%
10/2/2019	9.73%	2.67%	7.06%
10/8/2019	9.40%	2.64%	6.76%
10/15/2019	9.70%	2.62%	7.08%
10/21/2019	9.40%	2.60%	6.80%
10/31/2019	9.70%	2.57%	7.13%
10/31/2019	10.00%	2.57%	7.43%
10/31/2019	10.20%	2.57%	7.63%
10/31/2019	10.00%	2.57%	7.43%
11/7/2019	9.35%	2.55%	6.80%
11/13/2019	9.60%	2.54%	7.06%
11/13/2019	9.60%	2.54%	7.06%
12/6/2019	9.87%	2.47%	7.40%
12/11/2019	9.40%	2.46%	6.94%
12/17/2019	9.75%	2.44%	7.31%
12/18/2019	9.60%	2.44%	7.16%
12/18/2019	9.60%	2.44%	7.16%
12/19/2019	10.20%	2.44%	7.76%
12/19/2019	10.05%	2.44%	7.61%
12/19/2019	10.25%	2.44%	7.81%
12/20/2019	9.20%	2.44%	6.76%
12/26/2019	9.75%	2.42%	7.33%
1/15/2020	9.35%	2.37%	6.98%
1/16/2020	8.80%	2.37%	6.43%
1/24/2020	9.44%	2.35%	7.09%
2/3/2020	9.40%	2.32%	7.08%
2/24/2020	9.10%	2.27%	6.83%
2/25/2020	9.50%	2.27%	7.23%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
2/28/2020	9.70%	2.25%	7.45%
3/25/2020	9.40%	2.15%	7.25%
3/26/2020	9.48%	2.14%	7.34%
4/21/2020	9.80%	2.02%	7.78%
5/19/2020	9.20%	1.94%	7.26%
6/16/2020	9.65%	1.86%	7.79%
7/8/2020	9.40%	1.80%	7.60%
8/4/2020	9.50%	1.70%	7.80%
8/20/2020	9.90%	1.64%	8.26%
8/21/2020	9.35%	1.64%	7.71%

Average: 4.79%  
Count: 1,160

Expected Earnings Analysis

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		Expected ROE 2023-25	Shares Outstanding 2020	Shares Outstanding 2023-25	% Increase	Adjustment Factor	Adjusted ROE
Atmos Energy Corporation	ATO	9.0%	124.00	145.00	3.18%	1.016	9.14%
New Jersey Resources Corporation	NJR	9.5%	96.00	100.00	0.82%	1.004	9.54%
Northwest Natural Holding Company	NWN	8.5%	31.00	32.00	0.64%	1.003	8.53%
ONE Gas, Inc.	OGS	8.5%	53.00	55.00	0.74%	1.004	8.53%
South Jersey Industries, Inc.	SJI	12.0%	101.00	110.00	1.72%	1.009	12.10%
Southwest Gas Holdings, Inc.	SWX	10.0%	57.00	65.00	2.66%	1.013	10.13%
Spire Inc.	SR	7.0%	52.00	55.00	1.13%	1.006	7.04%
						Median	9.14%
						Mean	9.29%

Notes:

- [1] Source: Value Line  
 [2] Source: Value Line  
 [3] Source: Value Line  
 [4] Equals  $([3] / [2])^{(1/5)} - 1$   
 [5] Equals  $(2 \times (1 + [4])) / (2 + [4])$   
 [6] Equals [1] x [5]

**Annualized Volatility and Returns of Utility Groups and  
Market Indices (February 2020 - August 2020)<sup>1</sup>**

	<b>D'Ascendis Proxy Group</b>	<b>Dow Jones Utility Average (DJU)</b>	<b>Utilities Select SPDR (XLU)</b>	<b>Dow Jones Industrial Average</b>	<b>S&amp;P 500</b>
<b>Price Change</b>	-24.21%	-14.42%	-14.11%	0.62%	8.52%
<b>Annualized Volatility</b>	63.88%	48.47%	48.67%	45.89%	42.65%

<sup>1</sup> Sources: S&P Global Market Intelligence; Bloomberg Professional.



Calculation of Correlation Coefficients for Utility Groups  
Relative to Market Indices (February 2020 - August 2020)<sup>1</sup>

Group	S&P 500	DJIA
D'Ascendis Proxy Group	82.94%	82.15%
DJU	84.42%	83.45%
XLU	84.74%	83.39%

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<sup>1</sup> Sources: S&P Global Market Intelligence; Bloomberg Professional.

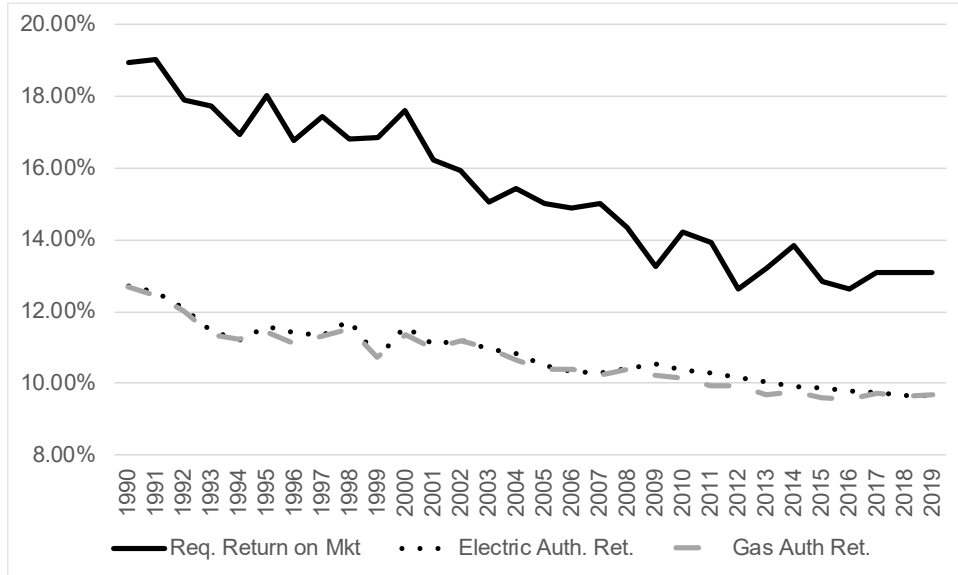
Calculation of Correlation Coefficients for Utility Groups  
Relative to Market Indices (December 2007 - June 2009)<sup>1</sup>

Group	S&P 500	DJIA
D'Ascendis Proxy Group	75.62%	76.49%
DJU	81.57%	82.13%
XLU	78.36%	78.59%

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<sup>1</sup> Sources: S&P Global Market Intelligence; Bloomberg Professional.

**Relationship between Investor-Required Return on the Market and Authorized Returns for Gas and Electric Utilities (1990 - 2019)<sup>1</sup>**



<sup>1</sup> Source: 2020 SBBI® Yearbook, Stocks, Bonds, Bills, and Inflation®, Appendix A-1 and Appendix A-7.

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 20200051-GU**  
**DOCKET NO. 20200166-GU**  
**EXHIBIT NO. (DWD-1)**

**WITNESS: D'ASCENDIS**  
**DOCUMENT NO. 13**  
**PAGE 1 OF 1**  
**FILED: 09/21/2020**

Gross Domestic Product by Industry

Industry	1947	2019	CAGR
Agriculture, forestry, fishing, and hunting	19.9	169.2	3.02%
Mining	5.8	320.3	5.73%
Utilities	3.5	334.6	<b>6.54%</b>
Construction	8.9	886.6	<b>6.60%</b>
Manufacturing	63.4	2,359.9	5.15%
Wholesale trade	15.6	1,278.1	6.31%
Retail trade	23.2	1,172.9	5.60%
Transportation and warehousing	14.1	684.5	5.54%
Information	7.7	1,120.3	<b>7.16%</b>
Finance, insurance, real estate, rental, and leasing	25.8	4,491.7	<b>7.43%</b>
Professional and business services	8.2	2,742.2	<b>8.41%</b>
Educational services, health care, and social assistance	4.6	1,881.4	<b>8.71%</b>
Arts, entertainment, recreation, accommodation, and food services	8.0	898.5	<b>6.78%</b>
Other services, except government	7.5	456.6	5.87%
Government	33.5	2,630.9	6.25%
<b>Total Gross Domestic Product</b>	<b>249.7</b>	<b>21,427.7</b>	<b>6.38%</b>

Industry	Gross Domestic				Gross Domestic Product In Ending		% of Total
	Product	1947-2019 CAGR	Beginning Year	Ending Year	Year		
Agriculture, forestry, fishing, and hunting	169.2	3.02%	1	225	1.E+05		
Mining	320.3	5.73%	1	225	9.E+07		
Utilities	334.6	6.54%	1	225	5.E+08		
Construction	886.6	6.60%	1	225	2.E+09		
Manufacturing	2,359.9	5.15%	1	225	2.E+08		
Wholesale trade	1,278.1	6.31%	1	225	1.E+09		
Retail trade	1,172.9	5.60%	1	225	2.E+08		
Transportation and warehousing	684.5	5.54%	1	225	1.E+08		
Information	1,120.3	7.16%	1	225	6.E+09		
Finance, insurance, real estate, rental, and leasing	4,491.7	7.43%	1	225	5.E+10		
Professional and business services	2,742.2	8.41%	1	225	2.E+11		
Educational services, health care, and social assistance	1,881.4	8.71%	1	225	3.E+11	50.06%	
Arts, entertainment, recreation, accommodation, and food services	898.5	6.78%	1	225	2.E+09		
Other services, except government	456.6	5.87%	1	225	2.E+08		
Government	2,630.9	6.25%	1	225	2.E+09		
<b>Total Gross Domestic Product</b>	<b>21,427.7</b>				<b>5.E+11</b>		

Industry	Gross Domestic				Gross Domestic Product In Ending		% of Total
	Product	1947-2019 CAGR	Beginning Year	Ending Year	Year		
Agriculture, forestry, fishing, and hunting	169.2	3.02%	1	3430	3.E+46		
Mining	320.3	5.73%	1	3430	3.E+85		
Utilities	334.6	6.54%	1	3430	7.E+96		
Construction	886.6	6.60%	1	3430	1.E+98		
Manufacturing	2,359.9	5.15%	1	3430	2.E+78		
Wholesale trade	1,278.1	6.31%	1	3430	2.E+94		
Retail trade	1,172.9	5.60%	1	3430	2.E+84		
Transportation and warehousing	684.5	5.54%	1	3430	1.E+83		
Information	1,120.3	7.16%	1	3430	1.E+106		
Finance, insurance, real estate, rental, and leasing	4,491.7	7.43%	1	3430	3.E+110		
Professional and business services	2,742.2	8.41%	1	3430	5.E+123		
Educational services, health care, and social assistance	1,881.4	8.71%	1	3430	5.E+127	99.99%	
Arts, entertainment, recreation, accommodation, and food services	898.5	6.78%	1	3430	4.E+100		
Other services, except government	456.6	5.87%	1	3430	5.E+87		
Government	2,630.9	6.25%	1	3430	5.E+93		
<b>Total Gross Domestic Product</b>	<b>21,427.7</b>				<b>5.E+127</b>		

Source: Bureau of Economic Analysis

Coefficient of Variation (CoV)<sup>1</sup>

Measure	February 26, 2016 - March 3, 2017	January 13, 2020 - August 31, 2020	Long-Term Average
Average CoV in 30-Year Treasury Bond	3.37%	8.03%	3.60%
Average CoV in Moody's Utility A Bond	2.10%	6.01%	2.36%

<sup>1</sup> Source: Bloomberg Professional.

S&P 500 Market Return vs. Graham-Harvey Survey Expected Return<sup>1</sup>

	Actual	Graham-Harvey Estimate
2018	-4.38%	6.57%
2017	21.83%	5.00%
2016	11.96%	4.32%
2015	1.38%	6.07%
2014	13.69%	5.00%
2013	32.39%	3.40%
2012	16.00%	4.00%
Average	13.27%	5.30%

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<sup>1</sup> Sources: Duff & Phelps, 2020 SBBI® Yearbook, Appendix A-1; <http://www.cfosurvey.org> (one-year return estimates as of fourth quarter of the previous year); Pablo Fernandez, Alberto Ortiz and Isabel Fernandez Acin, *Discount Rate (Risk-Free Rate and Market Risk Premium) used for 41 countries in 2017: a survey*, April 17, 2017; Pablo Fernandez, Alberto Ortiz and Isabel Fernandez Acin, *Discount Rate (Risk-Free Rate and Market Risk Premium) used for 41 countries in 2015: a survey*, April 23, 2015.

**PEOPLES GAS SYSTEM**  
**DOCKET NO. 20200051-GU**  
**DOCKET NO. 20200166-GU**  
**EXHIBIT NO. (DWD-1)**  
**WITNESS: D'ASCENDIS**  
**DOCUMENT NO. 16**  
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Mr. Garrett's Implied Equity Risk Analysis:  
 As Filed

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Market Value	Operating Earnings	Dividends	Buybacks	Earnings Yield	Dividend Yield	Buyback Yield	Gross Cash Yield
2014	18,245	1,004	350	553	5.50%	1.92%	3.03%	4.95%
2015	17,900	885	382	572	4.95%	2.14%	3.20%	5.33%
2016	19,268	920	397	536	4.77%	2.06%	2.78%	4.85%
2017	22,821	1,066	420	519	4.67%	1.84%	2.28%	4.12%
2018	21,027	1,282	456	806	6.10%	2.17%	3.84%	6.01%
2019	26,760	1,305	485	729	4.88%	1.81%	2.72%	4.54%
<i>Growth Rate</i>		5.37%	6.74%	5.66%				
Cash Yield	4.81%	[9]						
Growth Rate	5.37%	[10]						
Risk-free Rate	1.41%	[11]						
Current Index Value	3,137	[12]						
<hr/>								
	[13]	[14]	[15]	[16]	[17]			
Year	1	2	3	4	5			
Expected Dividends	159.05	167.60	176.60	186.09	196.09			
Expected Terminal Value					3428.46			
Present Value	148.35	145.80	143.30	140.84	2558.70			
Intrinsic Index Value	3137	[18]						
% Terminal Value	77.15%				GOAL SEEK			
Required Return on Market	7.21%	[19]			0			
<b>Implied Equity Risk Premium</b>	<b>5.80%</b>	[20]						

Notes:

[1-4] S&P Quarterly Press Releases, data found at www.spdji.com/indices/equity/sp-500 (all dollar figures are in \$ billions)

[1] Market value of S&P 500

[5] = [2] / [1]

[6] = [3] / [1]

[7] = [4] / [1]

[8] = [6] + [7]

[9] = Average of [8]

[10] = Compound annual growth rate of [2] = (end value / beginning value)<sup>1/4</sup> - 1

[11] Risk-free rate calculated in Exhibit DJG-7

[12] 30-day average of closing index prices from Exhibit DJG-3

[13-16] Expected dividends = [9]\*[12]\*(1+[10])<sup>n</sup> ; Present value = expected dividend / (1+[11]+[20])<sup>n</sup>

[17] Expected terminal value = expected dividend \* (1+[11]) / [20] ; Present value = (expected dividend + expected terminal value) / (1+[11]+[20])<sup>n</sup>

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

[19] = [20] + [11]

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

Differences due to rounding

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Mr. Garrett's Implied Equity Risk Analysis:  
 First Stage Growth Rate Updated Using Analyst Projections

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	ARITHMETIC AVERAGE			
Year	Market Value	Operating Earnings	Dividends	Buybacks	Earnings Yield	Dividend Yield	Buyback Yield	Gross Cash Yield	Market Value	Operating Earnings	Dividends	Buybacks
2014	18,245	1,004	350	553	5.50%	1.92%	3.03%	4.95%				
2015	17,900	885	382	572	4.95%	2.14%	3.20%	5.33%	-1.89%	-11.83%	9.10%	3.41%
2016	19,268	920	397	536	4.77%	2.06%	2.78%	4.85%	7.65%	3.89%	3.90%	-6.25%
2017	22,821	1,066	420	519	4.67%	1.84%	2.28%	4.12%	18.44%	15.89%	5.68%	-3.17%
2018	21,027	1,282	456	806	6.10%	2.17%	3.84%	6.01%	-7.86%	20.23%	8.70%	55.26%
2019	26,760	1,305	485	729	4.88%	1.81%	2.72%	4.54%	27.26%	1.79%	6.39%	-9.63%
<b>Growth Rate</b>		5.37%	6.74%	5.66%					8.72%	5.99%	6.75%	7.92%
Cash Yield	4.96%	[9]										
Growth Rate	7.35%	[10]	change to average of annual growth rates of [1], [2], [3], and [4]									
Risk-free Rate	1.41%	[11]										
Current Index Value	3,137	[12]										
	[13]	[14]	[15]	[16]	[17]							
<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>							
Expected Dividends	167.19	179.48	192.66	206.82	222.02							
Expected Terminal Value					3467.58							
Present Value	154.94	154.14	153.34	152.55	2522.06							
Intrinsic Index Value	3137	[18]										
% Terminal Value	75.56%				GOAL SEEK							
Required Return on Market	7.91%	[19]			0							
<b>Implied Equity Risk Premium</b>	<b>6.49%</b>	[20]										

Notes:

- [1-4] S&P Quarterly Press Releases, data found at www.spdji.com/indices/equity/sp-500 (all dollar figures are in \$ billions)
- [1] Market value of S&P 500
- [5] = [2] / [1]
- [6] = [3] / [1]
- [7] = [4] / [1]
- [8] = [6] + [7]
- [9] = Average of [8]
- [10] = Average of annual growth rates of [1], [2], [3], and [4]
- [11] Risk-free rate from Exhibit DJG-7
- [12] 30-day average of closing index prices from Exhibit DJG-3
- [13-16] Expected dividends = [9] \* [12] \* (1 + [10])<sup>n</sup>; Present value = expected dividend / (1 + [11] + [20])<sup>n</sup>
- [17] Expected terminal value = expected dividend \* (1 + [11]) / [20]; Present value = (expected dividend + expected terminal value) / (1 + [11] + [20])<sup>n</sup>
- [18] = Sum([13-17]) present values.
- [19] = [20] + [11]
- [20] Internal rate of return calculation setting [18] equal to [12] and solving for the discount rate



Hypothetical Example: Flotation Cost Recovery

Return on Equity 10.75%  
 Flotation Costs 2.75%  
 Market Value \$ 25.00  
 Dividend Yield 3.50%  
 Growth Rate 7.25%  
 Adjusted ROE 10.85%  
**Flotation Cost Recovery: No**  
**DCF Estimate 10.65%**

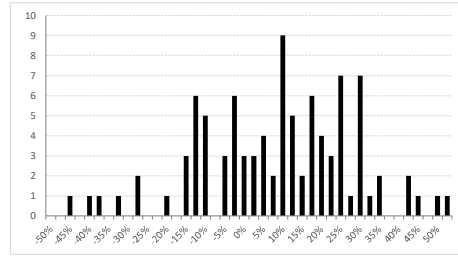
	Common Stock	Retained Earnings	Book Value	Market Price	Market/ Book Value	Earnings Per Share	Dividends Per Share	Payout Ratio
1	\$ 24.31		\$ 24.31	\$ 25.00	1.0283	\$ 2.61	\$ 0.88	33.48%
2	\$ 24.31	\$ 1.74	\$ 26.05	\$ 26.79	1.0283	\$ 2.80	\$ 0.94	33.48%
3	\$ 24.31	\$ 3.60	\$ 27.91	\$ 28.70	1.0283	\$ 3.00	\$ 1.00	33.48%
4	\$ 24.31	\$ 5.60	\$ 29.91	\$ 30.76	1.0283	\$ 3.22	\$ 1.08	33.48%
5	\$ 24.31	\$ 7.74	\$ 32.05	\$ 32.96	1.0283	\$ 3.45	\$ 1.15	33.48%
6	\$ 24.31	\$ 10.03	\$ 34.34	\$ 35.31	1.0283	\$ 3.69	\$ 1.24	33.48%
7	\$ 24.31	\$ 12.48	\$ 36.80	\$ 37.84	1.0283	\$ 3.96	\$ 1.32	33.48%
8	\$ 24.31	\$ 15.12	\$ 39.43	\$ 40.54	1.0283	\$ 4.24	\$ 1.42	33.48%
9	\$ 24.31	\$ 17.94	\$ 42.25	\$ 43.44	1.0283	\$ 4.54	\$ 1.52	33.48%
10	\$ 24.31	\$ 20.96	\$ 45.27	\$ 46.55	1.0283	\$ 4.87	\$ 1.63	33.48%
	Growth Rate		7.15%	7.15%		7.15%	7.15%	

Return on Equity 10.75%  
 Flotation Costs 2.75%  
 Market Value \$ 25.00  
 Dividend Yield 3.50%  
 Growth Rate 7.25%  
 Adjusted ROE 10.85%  
**Flotation Cost Recovery: Yes**  
**DCF Estimate 10.75%**

	Common Stock	Retained Earnings	Book Value	Market Price	Market/ Book Value	Earnings Per Share	Dividends Per Share	Payout Ratio
1	\$ 24.31		\$ 24.31	\$ 25.00	1.0283	\$ 2.64	\$ 0.88	33.17%
2	\$ 24.31	\$ 1.76	\$ 26.08	\$ 26.81	1.0283	\$ 2.83	\$ 0.94	33.17%
3	\$ 24.31	\$ 3.65	\$ 27.97	\$ 28.76	1.0283	\$ 3.03	\$ 1.01	33.17%
4	\$ 24.31	\$ 5.68	\$ 29.99	\$ 30.84	1.0283	\$ 3.25	\$ 1.08	33.17%
5	\$ 24.31	\$ 7.86	\$ 32.17	\$ 33.08	1.0283	\$ 3.49	\$ 1.16	33.17%
6	\$ 24.31	\$ 10.19	\$ 34.50	\$ 35.48	1.0283	\$ 3.74	\$ 1.24	33.17%
7	\$ 24.31	\$ 12.69	\$ 37.00	\$ 38.05	1.0283	\$ 4.01	\$ 1.33	33.17%
8	\$ 24.31	\$ 15.37	\$ 39.68	\$ 40.81	1.0283	\$ 4.31	\$ 1.43	33.17%
9	\$ 24.31	\$ 18.25	\$ 42.56	\$ 43.76	1.0283	\$ 4.62	\$ 1.53	33.17%
10	\$ 24.31	\$ 21.33	\$ 45.65	\$ 46.94	1.0283	\$ 4.95	\$ 1.64	33.17%
	Growth Rate		7.25%	7.25%		7.25%	7.25%	

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Frequency Distribution of Market Risk Premium, 1926 - 2019



Year	Large Company Stocks	Long-Term Government	MRP	MRP		
	Total Returns	Bond Income Returns		Bin	Frequency	Cumulative %
	Jan-Dec*	Jan-Dec*	Jan-Dec*			
1926	0.1162	0.0373	0.0789	-50.00%	0	0.0%
1927	0.3749	0.0341	0.3408	-47.50%	0	0.0%
1928	0.4361	0.0322	0.4039	-45.00%	1	1.1%
1929	-0.0842	0.0347	-0.1189	-42.50%	0	1.1%
1930	-0.2490	0.0332	-0.2822	-40.00%	1	2.1%
1931	-0.4334	0.0333	-0.4667	-37.50%	1	3.2%
1932	-0.0819	0.0369	-0.1188	-35.00%	0	3.2%
1933	0.5399	0.0312	0.5087	-32.50%	1	4.3%
1934	-0.0144	0.0318	-0.0462	-30.00%	0	4.3%
1935	0.4767	0.0281	0.4486	-27.50%	2	6.4%
1936	0.3392	0.0277	0.3115	-25.00%	0	6.4%
1937	-0.3503	0.0266	-0.3769	-22.50%	0	6.4%
1938	0.3112	0.0264	0.2848	-20.00%	1	7.4%
1939	-0.0041	0.0240	-0.0281	-17.50%	0	7.4%
1940	-0.0978	0.0223	-0.1201	-15.00%	3	10.6%
1941	-0.1159	0.0194	-0.1353	-12.50%	6	17.0%
1942	0.2034	0.0246	0.1788	-10.00%	5	17.0%
1943	0.2590	0.0244	0.2346	-7.50%	0	22.3%
1944	0.1975	0.0246	0.1729	-5.00%	3	25.5%
1945	0.3644	0.0234	0.3410	-2.50%	6	31.9%
1946	-0.0807	0.0204	-0.1011	0.00%	3	35.1%
1947	0.0571	0.0213	0.0358	2.50%	3	38.3%
1948	0.0550	0.0240	0.0310	5.00%	4	42.6%
1949	0.1879	0.0225	0.1654	7.50%	2	44.7%
1950	0.3171	0.0212	0.2959	10.00%	9	54.3%
1951	0.2402	0.0238	0.2164	12.50%	5	59.6%
1952	0.1637	0.0266	0.1571	15.00%	2	61.7%
1953	-0.0099	0.0284	-0.0383	17.50%	6	68.1%
1954	0.5262	0.0279	0.4983	20.00%	4	72.3%
1955	0.3156	0.0275	0.2881	22.50%	3	75.5%
1956	0.0656	0.0299	0.0357	25.00%	7	83.0%
1957	-0.1078	0.0344	-0.1422	27.50%	1	84.0%
1958	0.4336	0.0327	0.4009	30.00%	7	91.5%
1959	0.1196	0.0401	0.0795	32.50%	1	92.6%
1960	0.0047	0.0426	-0.0379	35.00%	2	94.7%
1961	0.2689	0.0383	0.2306	37.50%	0	94.7%
1962	-0.0873	0.0400	-0.1273	40.00%	0	94.7%
1963	-0.1469	0.0389	-0.2120	42.50%	2	96.8%
1964	0.1648	0.0415	0.1233	45.00%	1	97.9%
1965	0.1245	0.0419	0.0826	47.50%	0	97.9%
1966	-0.1006	0.0449	-0.1455	50.00%	1	98.9%
1967	0.2398	0.0459	0.1939	51.00%	1	100.0%
1968	0.1106	0.0550	0.0556			
1969	-0.0850	0.0595	-0.1445			
1970	0.0386	0.0674	-0.0288			
1971	0.1430	0.0632	0.0798			
1972	0.1899	0.0587	0.1312			
1973	-0.1469	0.0651	-0.2120			
1974	-0.2847	0.0727	-0.3374			
1975	0.3723	0.0799	0.2924			
1976	0.2393	0.0789	0.1604			
1977	-0.0716	0.0714	-0.1430			
1978	0.0657	0.0790	-0.0133			
1979	0.1861	0.0886	0.0975			
1980	0.3250	0.0997	0.2253			
1981	-0.0492	0.1155	-0.1647			
1982	0.2155	0.1350	0.0805			
1983	0.2256	0.1038	0.1218			
1984	0.0627	0.1174	-0.0547			
1985	0.3173	0.1125	0.2048			
1986	0.1867	0.0898	0.0969			
1987	0.0525	0.0792	-0.0267			
1988	0.1661	0.0897	0.0764			
1989	0.3169	0.0881	0.2288			
1990	-0.0310	0.0819	-0.1129			
1991	0.3047	0.0822	0.2225			
1992	0.0762	0.0726	0.0036			
1993	0.1008	0.0717	0.0291			
1994	0.0132	0.0659	-0.0527			
1995	0.3758	0.0760	0.2998			
1996	0.2296	0.0618	0.1678			
1997	0.3336	0.0664	0.2672			
1998	0.2858	0.0583	0.2275			
1999	0.2104	0.0557	0.1547			
2000	-0.0910	0.0650	-0.1560			
2001	-0.1189	0.0553	-0.1742			
2002	-0.2210	0.0559	-0.2769			
2003	0.2868	0.0480	0.2388			
2004	0.1088	0.0502	0.0586			
2005	0.0491	0.0469	0.0022			
2006	0.1579	0.0468	0.1111			
2007	0.0549	0.0486	0.0063			
2008	-0.3700	0.0445	-0.4145			
2009	0.2646	0.0347	0.2299			
2010	0.1506	0.0425	0.1081			
2011	0.0211	0.0362	-0.0171			
2012	0.1600	0.0246	0.1354			
2013	0.3239	0.0288	0.2951			
2014	0.1369	0.0341	0.1028			
2015	0.0138	0.0247	-0.0109			
2016	0.1196	0.0230	0.0966			
2017	0.2183	0.0267	0.1916			
2018	-0.0438	0.0282	-0.0720			
2019	0.3149	0.0255	0.2894			
Average	0.1209	0.0494	0.0715			
Std. Dev.	0.1976	0.0262	0.1987			

Bin	Frequency	Cumulative %
-50.00%	0	0.0%
-47.50%	0	0.0%
-45.00%	1	1.1%
-42.50%	0	1.1%
-40.00%	1	2.1%
-37.50%	1	3.2%
-35.00%	0	3.2%
-32.50%	1	4.3%
-30.00%	0	4.3%
-27.50%	2	6.4%
-25.00%	0	6.4%
-22.50%	0	6.4%
-20.00%	1	7.4%
-17.50%	0	7.4%
-15.00%	3	10.6%
-12.50%	6	17.0%
-10.00%	5	22.3%
-7.50%	0	22.3%
-5.00%	3	25.5%
-2.50%	6	31.9%
0.00%	3	35.1%
2.50%	3	38.3%
5.00%	4	42.6%
7.50%	2	44.7%
10.00%	9	54.3%
12.50%	5	59.6%
15.00%	2	61.7%
17.50%	6	68.1%
20.00%	4	72.3%
22.50%	3	75.5%
25.00%	7	83.0%
27.50%	1	84.0%
30.00%	7	91.5%
32.50%	1	92.6%
35.00%	2	94.7%
37.50%	0	94.7%
40.00%	0	94.7%
42.50%	2	96.8%
45.00%	1	97.9%
47.50%	0	97.9%
50.00%	1	98.9%
51.00%	1	100.0%

Count: 94

Highest MRP from Direct	Rank	
13.48%	60.90%	39.10%

Historical Market Return from Direct		
Hevert	% Rank	Occurrence
13.53%	49.30%	48
14.79%	51.20%	46
		94

MRPs from Rebuttal		
	Rank	
12.51%	59.10%	40.90%
12.46%	59.10%	40.90%

Historical Market Return from Rebuttal		
D'Ascendis	% Rank	Occurrence
13.78%	49.60%	47
13.83%	49.70%	47
		94

Source: Duff & Phelps, 2020 SBBI Yearbook, Appendix A-1, A-7

Calculation of Alternative Expected Market Risk Premiums

The average expected market risk premium is derived by using six different measures from three sources: Ibbotson, Value Line, and Bloomberg as illustrated below:

Ibbotson-Based Market Return Estimates:

Measure 1: Ibbotson Arithmetic Mean MRP (1926-2019)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2019:	12.10 %
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.09
MRP based on Ibbotson Historical Data:	7.01 %

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data (1926-2019):

10.97 %

Measure 3: Application of the Predictive Risk Premium Model to Ibbotson Historical Data (January 1926 - August 2020):

10.77 %

Value Line-Based Market Return Estimates:

Measure 4: Value Line Projected Market Return (Thirteen weeks ending May 29, 2020)

Total projected return on the market 3-5 years hence*:	14.83 %
Risk-Free Rate From Rebuttal:	1.32
MRP based on Value Line Summary & Index:	13.51

\*Forecasted 3-5 year capital appreciation plus expected dividend yield:

Measure 5: Value Line Projected Return on the Market based on the S&P 500:

13.83 %

Risk-Free Rate From Rebuttal:  
MRP based on Value Line data

1.32  
12.51

Bloomberg-Based Market Return Estimate

Measure 6: Bloomberg Projected Return on the Market based on the S&P 500:

13.78 %

Risk-Free Rate From Rebuttal:  
MRP based on Bloomberg data

1.32  
12.46

11.20 %

Sources:

Stocks, Bonds, Bills, and Inflation - 2020 SBBI Yearbook, John Wiley & Sons, Inc.  
Value Line Summary and Index  
Bloomberg Professional Services

Indicated ROE  
Derived by the Predictive Risk Premium Model (1)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
	LT Average Predicted Variance	Spot Predicted Variance	Recommended Variance (2)	GARCH Coefficient	Predicted Risk Premium (3)	Current Risk-Free Rate (4)	Short-Term Projected Risk-Free Rate (4)	Long-Term Projected Risk-Free Rate (4)	Indicated ROE - Current Risk-Free Rate (5)	Indicated ROE - Short-Term Projected Risk-Free Rate (6)	Indicated ROE - Long-Term Projected Risk-Free Rate (7)
Proxy Group of Eight Natural Gas Distribution Companies											
Atmos Energy Corporation	0.33%	0.26%	0.33%	2.22208	9.16%	1.32%	1.60%	3.40%	10.48%	10.76%	12.56%
New Jersey Resources Corp.	0.38%	0.37%	0.38%	1.96408	9.30%	1.32%	1.60%	3.40%	10.62%	10.90%	12.70%
Northwest Natural Gas Company	0.32%	0.44%	0.32%	1.56624	6.20%	1.32%	1.60%	3.40%	7.52%	7.80%	9.60%
ONE Gas, Inc.	0.25%	0.27%	0.25%	3.80990	12.09%	1.32%	1.60%	3.40%	13.41%	13.69%	15.49%
South Jersey Industries, Inc.	0.38%	0.61%	0.38%	1.55486	7.29%	1.32%	1.60%	3.40%	8.61%	8.89%	10.69%
Southwest Gas Holdings, Inc.	0.44%	0.46%	0.44%	1.35598	7.37%	1.32%	1.60%	3.40%	8.69%	8.97%	10.77%
Spire Inc.	0.71%	0.36%	0.71%	0.91206	8.06%	1.32%	1.60%	3.40%	9.38%	9.66%	11.46%
								Average	9.82%	10.10%	11.90%
								Median	9.38%	9.66%	11.46%

NMF = Not Meaningful Figure

Notes:

- (1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the
- (2) Given current market conditions, I recommend using the long-term average predicted variance.
- (3)  $(1 + (\text{Column [3]} * \text{Column [4]})^{1/2}) - 1$ .
- (4) From note 2 on page 2 of Schedule DWD-4.
- (5)  $\text{Column [5]} + \text{Column [6]}$ .
- (6)  $\text{Column [5]} + \text{Column [7]}$ .
- (7)  $\text{Column [5]} + \text{Column [8]}$ .

ATTACHMENT A

RESUME AND LIST OF TESTIMONY OF

DYLAN W. D'ASCENDIS

**Summary**

Dylan is an experienced consultant and a Certified Rate of Return Analyst (CRRRA) and Certified Valuation Analyst (CVA). He has served as a consultant for investor-owned and municipal utilities and authorities for 12 years. Dylan has extensive experience in rate of return analyses, class cost of service, rate design, and valuation for regulated public utilities. He has testified as an expert witness in the subjects of rate of return, cost of service, rate design, and valuation before 22 regulatory commissions in the U.S., one Canadian province, and an American Arbitration Association panel.

He also maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured.

**Areas of Specialization**

- Regulation and Rates
- Utilities
- Mutual Fund Benchmarking
- Capital Market Risk
- Financial Modeling
- Valuation
- Regulatory Strategy
- Rate Case Support
- Rate of Return
- Cost of Service
- Rate Design

**Recent Expert Testimony Submission/Apearances**

<b>Jurisdiction</b>	<b>Topic</b>
■ Massachusetts Department of Public Utilities	Rate of Return
■ New Jersey Board of Public Utilities	Rate of Return
■ Hawaii Public Utilities Commission	Cost of Service, Rate Design
■ South Carolina Public Service Commission	Return on Common Equity
■ American Arbitration Association	Valuation

**Recent Assignments**

- Provided expert testimony on the cost of capital for ratemaking purposes before numerous state utility regulatory agencies
- Maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured
- Sponsored valuation testimony for a large municipal water company in front of an American Arbitration Association Board to justify the reasonability of their lease payments to the City
- Co-authored a valuation report on behalf of a large investor-owned utility company in response to a new state regulation which allowed the appraised value of acquired assets into rate base

**Recent Publications and Speeches**

- Co-Author of: "Decoupling, Risk Impacts and the Cost of Capital", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. The Electricity Journal, March, 2020.
- Co-Author of: "Decoupling Impact and Public Utility Conservation Investment", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. Energy Policy Journal, 130 (2019), 311-319.
- "Establishing Alternative Proxy Groups", before the Society of Utility and Regulatory Financial Analysts: 51st Financial Forum, April 4, 2019, New Orleans, LA.
- "Past is Prologue: Future Test Year", Presentation before the National Association of Water Companies 2017 Southeast Water Infrastructure Summit, May 2, 2017, Savannah, GA.
- Co-author of: "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Pauline M. Ahern, and Frank J. Hanley, The Electricity Journal, May, 2013.
- "Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks", before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

SPONSOR	DATE	CASE/APPLICANT	DOCKET No.	SUBJECT
<b>Regulatory Commission of Alaska</b>				
Alaska Power Company	07/16	Alaska Power Company	Docket No. TA857-2	Rate of Return
<b>Alberta Utilities Commission</b>				
AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	01/20	AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	2021 Generic Cost of Capital, Proceeding ID. 24110	Rate of Return
<b>Arizona Corporation Commission</b>				
EPCOR Water Arizona, Inc.	06/20	EPCOR Water Arizona, Inc.	Docket No. WS-01303A-20-0177	Rate of Return
Arizona Water Company	12/19	Arizona Water Company – Western Group	Docket No. W-01445A-19-0278	Rate of Return
Arizona Water Company	08/18	Arizona Water Company – Northern Group	Docket No. W-01445A-18-0164	Rate of Return
<b>Colorado Public Utilities Commission</b>				
Summit Utilities, Inc.	04/18	Colorado Natural Gas Company	Docket No. 18AL-0305G	Return on Equity
Atmos Energy Corporation	06/17	Atmos Energy Corporation	Docket No. 17AL-0429G	Return on Equity
<b>Delaware Public Service Commission</b>				
Tidewater Utilities, Inc.	11/13	Tidewater Utilities, Inc.	Docket No. 13-466	Capital Structure
<b>Florida Public Service Commission</b>				
Utilities, Inc. of Florida	06/20	Utilities, Inc. of Florida	Docket No. 20200139-WS	Rate of Return
<b>Hawaii Public Utilities Commission</b>				
Lanai Water Company, Inc.	12/19	Lanai Water Company, Inc.	Docket No. 2019-0386	Cost of Service / Rate Design
Manele Water Resources, LLC	08/19	Manele Water Resources, LLC	Docket No. 2019-0311	Cost of Service / Rate Design
Kaupulehu Water Company	02/18	Kaupulehu Water Company	Docket No. 2016-0363	Rate of Return
Aqua Engineers, LLC	05/17	Puhi Sewer & Water Company	Docket No. 2017-0118	Cost of Service / Rate Design
Hawaii Resources, Inc.	09/16	Laie Water Company	Docket No. 2016-0229	Cost of Service / Rate Design
<b>Illinois Commerce Commission</b>				
Ameren Illinois Company d/b/a Ameren Illinois	07/20	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 20-0308	Return on Equity
Utility Services of Illinois, Inc.	11/17	Utility Services of Illinois, Inc.	Docket No. 17-1106	Cost of Service / Rate Design
Aqua Illinois, Inc.	04/17	Aqua Illinois, Inc.	Docket No. 17-0259	Rate of Return
Utility Services of Illinois, Inc.	04/15	Utility Services of Illinois, Inc.	Docket No. 14-0741	Rate of Return
<b>Indiana Utility Regulatory Commission</b>				
Aqua Indiana, Inc.	03/16	Aqua Indiana, Inc. Aboite Wastewater Division	Docket No. 44752	Rate of Return
Twin Lakes, Utilities, Inc.	08/13	Twin Lakes, Utilities, Inc.	Docket No. 44388	Rate of Return
<b>Kansas Corporation Commission</b>				

SPONSOR	DATE	CASE/APPLICANT	DOCKET No.	SUBJECT
Atmos Energy	07/19	Atmos Energy	19-ATMG-525-RTS	Rate of Return
<b>Louisiana Public Service Commission</b>				
Atmos Energy	04/20	Atmos Energy	Docket No. U-35535	Rate of Return
Louisiana Water Service, Inc.	06/13	Louisiana Water Service, Inc.	Docket No. U-32848	Rate of Return
<b>Maryland Public Service Commission</b>				
Washington Gas Light Company	08/20	Washington Gas Light Company	Case No. 9651	Rate of Return
FirstEnergy, Inc.	08/18	Potomac Edison Company	Case No. 9490	Rate of Return
<b>Massachusetts Department of Public Utilities</b>				
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Elec.)	D.P.U. 19-130	Rate of Return
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Gas)	D.P.U. 19-131	Rate of Return
Liberty Utilities	07/15	Liberty Utilities d/b/a New England Natural Gas Company	Docket No. 15-75	Rate of Return
<b>Mississippi Public Service Commission</b>				
Atmos Energy	03/19	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
Atmos Energy	07/18	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
<b>Missouri Public Service Commission</b>				
Indian Hills Utility Operating Company, Inc.	10/17	Indian Hills Utility Operating Company, Inc.	Case No. SR-2017-0259	Rate of Return
Raccoon Creek Utility Operating Company, Inc.	09/16	Raccoon Creek Utility Operating Company, Inc.	Docket No. SR-2016-0202	Rate of Return
<b>Public Utilities Commission of Nevada</b>				
Southwest Gas Corporation	08/20	Southwest Gas Corporation	Docket No. 20-02023	Return on Equity
<b>New Jersey Board of Public Utilities</b>				
FirstEnergy	02/20	Jersey Central Power & Light Co.	Docket No. ER20020146	Rate of Return
Aqua New Jersey, Inc.	12/18	Aqua New Jersey, Inc.	Docket No. WR18121351	Rate of Return
Middlesex Water Company	10/17	Middlesex Water Company	Docket No. WR17101049	Rate of Return
Middlesex Water Company	03/15	Middlesex Water Company	Docket No. WR15030391	Rate of Return
The Atlantic City Sewerage Company	10/14	The Atlantic City Sewerage Company	Docket No. WR14101263	Cost of Service / Rate Design
Middlesex Water Company	11/13	Middlesex Water Company	Docket No. WR1311059	Capital Structure
<b>North Carolina Utilities Commission</b>				
Duke Energy Carolinas, LLC	07/20	Duke Energy Carolinas, LLC	Docket No. E-7, Sub 1214	Return on Equity
Duke Energy Progress, LLC	07/20	Duke Energy Progress, LLC	Docket No. E-2, Sub 1219	Return on Equity
Aqua North Carolina, Inc.	12/19	Aqua North Carolina, Inc.	Docket No. W-218 Sub 526	Rate of Return
Carolina Water Service, Inc.	06/19	Carolina Water Service, Inc.	Docket No. W-354 Sub 364	Rate of Return



SPONSOR	DATE	CASE/APPLICANT	DOCKET No.	SUBJECT
Carolina Water Service, Inc.	09/18	Carolina Water Service, Inc.	Docket No. W-354 Sub 360	Rate of Return
Aqua North Carolina, Inc.	07/18	Aqua North Carolina, Inc.	Docket No. W-218 Sub 497	Rate of Return
<b>Public Utilities Commission of Ohio</b>				
Aqua Ohio, Inc.	05/16	Aqua Ohio, Inc.	Docket No. 16-0907-WW-AIR	Rate of Return
<b>Pennsylvania Public Utility Commission</b>				
Valley Energy, Inc.	07/19	C&T Enterprises	Docket No. R-2019-3008209	Rate of Return
Wellsboro Electric Company	07/19	C&T Enterprises	Docket No. R-2019-3008208	Rate of Return
Citizens' Electric Company of Lewisburg	07/19	C&T Enterprises	Docket No. R-2019-3008212	Rate of Return
Steelton Borough Authority	01/19	Steelton Borough Authority	Docket No. A-2019-3006880	Valuation
Mahoning Township, PA	08/18	Mahoning Township, PA	Docket No. A-2018-3003519	Valuation
SUEZ Water Pennsylvania Inc.	04/18	SUEZ Water Pennsylvania Inc.	Docket No. R-2018-000834	Rate of Return
Columbia Water Company	09/17	Columbia Water Company	Docket No. R-2017-2598203	Rate of Return
Veolia Energy Philadelphia, Inc.	06/17	Veolia Energy Philadelphia, Inc.	Docket No. R-2017-2593142	Rate of Return
Emporium Water Company	07/14	Emporium Water Company	Docket No. R-2014-2402324	Rate of Return
Columbia Water Company	07/13	Columbia Water Company	Docket No. R-2013-2360798	Rate of Return
Penn Estates Utilities, Inc.	12/11	Penn Estates, Utilities, Inc.	Docket No. R-2011-2255159	Capital Structure / Long-Term Debt Cost Rate
<b>South Carolina Public Service Commission</b>				
Blue Granite Water Co.	12/19	Blue Granite Water Company	Docket No. 2019-292-WS	Rate of Return
Carolina Water Service, Inc.	02/18	Carolina Water Service, Inc.	Docket No. 2017-292-WS	Rate of Return
Carolina Water Service, Inc.	06/15	Carolina Water Service, Inc.	Docket No. 2015-199-WS	Rate of Return
Carolina Water Service, Inc.	11/13	Carolina Water Service, Inc.	Docket No. 2013-275-WS	Rate of Return
United Utility Companies, Inc.	09/13	United Utility Companies, Inc.	Docket No. 2013-199-WS	Rate of Return
Utility Services of South Carolina, Inc.	09/13	Utility Services of South Carolina, Inc.	Docket No. 2013-201-WS	Rate of Return
Tega Cay Water Services, Inc.	11/12	Tega Cay Water Services, Inc.	Docket No. 2012-177-WS	Capital Structure
<b>Tennessee Public Utility Commission</b>				
Piedmont Natural Gas Company	07/20	Piedmont Natural Gas Company	Docket No. 20-00086	Return on Equity

DOCKET NO. 20200051-GU  
 DOCKET NO. 20200166-GU  
 ATTACHMENT A  
 WITNESS: D'ASCENDIS  
 FILED: 09/21/2020

SPONSOR	DATE	CASE/APPLICANT	DOCKET No.	SUBJECT
<b>Virginia State Corporation Commission</b>				
Aqua Virginia, Inc.	07/20	Aqua Virginia, Inc.	PUR-2020-00106	Rate of Return
WGL Holdings, Inc.	07/18	Washington Gas Light Company	PUR-2018-00080	Rate of Return
Atmos Energy Corporation	05/18	Atmos Energy Corporation	PUR-2018-00014	Rate of Return
Aqua Virginia, Inc.	07/17	Aqua Virginia, Inc.	PUR-2017-00082	Rate of Return
Massanutten Public Service Corp.	08/14	Massanutten Public Service Corp.	PUE-2014-00035	Rate of Return / Rate Design



**BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 20200051-GU  
IN RE: PETITION FOR BASE RATE INCREASE BY  
PEOPLES GAS SYSTEM**

**AND**

**DOCKET NO. 20200166-GU  
IN RE: PETITION FOR APPROVAL OF 2020  
DEPRECIATION STUDY BY PEOPLES GAS SYSTEM**

**REBUTTAL TESTIMONY AND EXHIBIT  
OF  
SEAN P. HILLARY**

**FILED: 09/21/2020**



1 Q. Have you prepared an exhibit supporting your rebuttal  
2 testimony?

3

4 A. Yes, I have. My Exhibit No. \_\_ (SPH-2), consisting of  
5 two documents prepared by me or under my direction and  
6 supervision.

7 Document No. 1 Moody's Updated Inflation Forecast

8 Document No. 2 Customer Growth - Customer Count

9 July 2020 vs July 2020

10

11 Q. Please summarize the key concerns and disagreements you  
12 have regarding the substance of witness Crane's  
13 testimony.

14

15 A. I will not address all of the Company's concerns and  
16 disagreements with witness Crane's testimony. That  
17 responsibility is being apportioned between Company and  
18 expert witnesses filing rebuttal testimony. Globally, I  
19 am very concerned with witness Crane's overall  
20 recommendation to only provide for a revenue increase of  
21 no more than \$18.6 million, or approximately 30 percent  
22 of the Company's \$61.7 million request. Witness Crane's  
23 reckless suggestion gives no consideration to the fact it  
24 has been twelve-years since Peoples' last rate case.  
25 Commission acceptance of witness Crane's recommendation

1 would put immense pressure on Peoples' financial  
2 integrity immediately in 2021 and would result in reduced  
3 system reliability, customer service, and the ability to  
4 meet customer demand as described in the rebuttal  
5 testimony of Company witnesses Richard F. Wall and  
6 Timothy O'Connor.

7  
8 Furthermore, the specific key concerns and disagreements  
9 addressed in my rebuttal testimony are as follows:

- 10 1. Witness Crane's exclusion of all 2021 capital  
11 expenditures in determining 2021 projected test year  
12 rate base,
- 13 2. Witness Crane's exclusion of the Company's O&M  
14 payroll costs and related employee costs for 2020  
15 and 2021 new positions,
- 16 3. Witness Crane's exclusion of cost increases due to  
17 inflation for trending 2019 Non-Labor O&M costs to  
18 the 2021 projected test year,
- 19 4. Witness Crane's exclusion of a portion of short-term  
20 incentive compensation costs included in the  
21 Company's claim,
- 22 5. Witness Crane's exclusion of a portion of the  
23 Company's American Gas Association membership dues,
- 24 6. Witness Crane's exclusion of increased costs for  
25 Marketing and Advertising expenses, and

1           7.    Witness Crane's errors made in her calculations that  
2            inflate her recommended adjustments.

3

4   **Q.**    Are there any other items you will address in your  
5           rebuttal testimony regarding witness Crane's proposals?

6

7   **A.**    Yes.  Witness Crane does not contest certain O&M costs  
8           included in the Company's claim, but she does propose  
9           amortization and recovery of these costs over a 5-year  
10          period.  I will discuss her proposals and my agreement or  
11          disagreement with each.

12

13   **1.   Exclusion   Of   All   2021   Capital   Expenditure   From**  
14   **Determination Of 2021 Projected Test Year Rate Base**

15   **Q.**    Please summarize the rate base adjustments witness Crane  
16           recommended in her testimony regarding Gross Plant in  
17           Service and Construction Work in Process ("CWIP").

18

19   **A.**    Witness Crane arbitrarily uses the Company's projected  
20           December 31, 2020 balances for Gross Plant and CWIP in  
21           determining the 13-month average of the 2021 test year  
22           for her rate base adjustments shown on Exhibit ACC-2,  
23           Schedules 4 and 5.  In doing this, witness Crane is in  
24           effect converting the Company's claim from one based on a

1 projected 2021 "test year" to a randomly determined  
2 December 31, 2020 single point in time based "test date".  
3

4 **Q.** Please explain further your concern and disagreement with  
5 witness Crane's recommended adjustments to Gross Plant in  
6 Service and CWIP.  
7

8 **A.** Witness Crane's simplistic methodology for determining  
9 the 2021 test year rate base totally disregards the 2021  
10 capital expenditure activity that should be factored into  
11 the ratemaking process of determining a 13-month average  
12 balance for Gross Plant in Service and CWIP. Witness  
13 Crane has not provided any systematic or detailed  
14 mathematical analysis to justify the total exclusion of  
15 the Company's 2021 capital expenditures in her  
16 recommended adjustments. Instead, the only analysis  
17 witness Crane has presented is simply to (i) compare the  
18 total 2020 and 2021 budgeted capital expenditures with  
19 the 2015-2019 budgeted amounts, (ii) state the amount of  
20 rate base growth between 2009 to 2021, and (iii)  
21 calculate growth in Gross Plant in Service and CWIP from  
22 2009 to 2019 and 2019 to 2021. As a result of these  
23 three calculations, witness Crane arbitrarily and  
24 inexplicably determined that Peoples should use the  
25 Company's December 31, 2020 balances for Gross Plant in



1 Service and CWIP and should not be allowed recovery of  
2 any capital expenditures occurring in the 2021 projected  
3 test year. The only explanation proffered up by witness  
4 Crane for this conclusion is that the "Company's claim is  
5 based on speculative projections" while conceding that  
6 her adjustments will "also be subjective" (see witness  
7 Crane testimony page 12, lines 5-10).

8  
9 **Q.** Are the Company's capital budgets "speculative"?

10  
11 **A.** No. The Company's capital expenditure budgets for 2020  
12 and 2021 specifically identify projects and recurring  
13 capital that can be analyzed and reviewed in detail.  
14 Evaluating capital projections on their merits at a  
15 detailed level is a well-established process undertaken  
16 by the Commission in prior projected test year rate cases  
17 for this Company and other utilities. The Commission  
18 should not unsystematically remove a complete year of  
19 capital spending activity based on witness Crane's  
20 "subjective" belief that "some adjustment to the  
21 Company's proposed revenue requirement is appropriate"  
22 (see witness Crane testimony page 12, lines 2-6). To do  
23 so would be arbitrary and manifestly unfair to Peoples  
24 and would put its customers at risk.

25

1     **Q.**    Does the Company's actual capital spending typically vary  
2            from the projected budgets?

3

4     **A.**    Yes.    Because the Company's budget process is finalized  
5            months before the budgeted year, changes do occur.  As  
6            discussed in the rebuttal testimony of witness Wall,  
7            these changes occur for a variety of reasons.  As shown  
8            in the Peoples' response to OPC's First Set of  
9            Interrogatories No. 30, the Company's actual capital  
10           spending from 2015 to 2019 has varied from the budget,  
11           however, the actual variance was only five percent lower  
12           over the 5-year period.  In 2019, Peoples' capital budget  
13           was \$240.0 million, and the Company's actual capital  
14           expenditures were \$234.2 million, which was within 2.4  
15           percent of the budgeted amount.  Although capital  
16           construction may vary based on typical project changes,  
17           that alone does not justify the suggestion of removing  
18           the capital expenditures in the test year.

19

20     **Q.**    Has Peoples recently updated its forecast of the 2020 and  
21            2021 Capital expenditures?

22

23     **A.**    Yes.    The most up-to-date capital expenditure forecast  
24            for all projects is being provided in response to Staff's  
25            Seventh Request for Production of Documents No. 15, which

1 is being filed coincident with this testimony. In  
2 addition, in response to Staff's Seventh Set of  
3 Interrogatories No. 58, updated CWIP and AFUDC balances  
4 by project, year and month are also provided. The  
5 Company's response to Staff's Seth Request for Production  
6 of Documents No. 15 includes highlighted changes and  
7 explanations by project and by recurring capital item.  
8 This updated 2020 and 2021 capital spending forecast  
9 reflects delayed, canceled, and new capital projects  
10 added since the Company's original rate case filing 2020  
11 and 2021 budgets were completed. For added projects, the  
12 response to Staff's Seventh Request for Production of  
13 Documents No. 15 includes documentation similar to what  
14 was provided in response to Staff's First Set of  
15 Interrogatories No. 1. For 2020 and 2021, the Company is  
16 now projecting capital expenditures to exceed the budgets  
17 contained in the rate case by \$8.4 million and \$31.0  
18 million, respectively.

19  
20 **Q.** Do you agree with witness Crane's analysis shown in the  
21 table at the top of page 9 in her testimony related to  
22 growth in Gross Plant in Service and CWIP for the periods  
23 2009 to 2019 and 2019 to 2021?

24  
25 **A.** No. Witness Crane's calculations of growth for the two

1 periods fails to properly recognize that Cast Iron Bare  
2 Steel Rider ("CI/BSR") investments had been made during  
3 the 2009 to 2019 period. Although these investments were  
4 not included in adjusted rate base during that period,  
5 they should be included in determining the actual growth  
6 of Gross Plant in Service and CWIP for the 2009 to 2019  
7 period. Instead, witness Crane's calculations are made  
8 on the incorrect assumption that the entirety of the  
9 cumulative CI/BSR investments made from the inception of  
10 the program in 2013 through 2020, totaling \$200.7 million  
11 were in effect made in the 2019 to 2021 period.  
12 Therefore, witness Crane's analysis is misleading in that  
13 it dramatically overstates the true 2019 to 2021 period  
14 growth percentage.

15  
16 **Q.** Does witness Crane fail to acknowledge the CI/BSR  
17 investments made through 2019 elsewhere in her testimony?  
18

19 **A.** Yes. On page 14, line 6-9 of witness Crane's testimony  
20 she states that her recommendation results in an increase  
21 in gross plant-in-service and CWIP of approximately \$570  
22 million from the Base Year (2019) to the Projected Test  
23 Year (2021) which she justifies as reasonable because it  
24 is a very significant increase relative to the Company's  
25 historic spending levels. Witness Crane's calculation of

1 the \$570 million amount once again fails to properly  
2 reflect the cumulative investments made in CI/BSR from  
3 2013 through the 2019 base year that are included in the  
4 \$200.7 million being rolled into adjusted rate base at  
5 the beginning of 2021.

6  
7 **Q.** What do you suggest the Commission do with witness  
8 Crane's recommendation on Gross Plant in Service, CWIP  
9 and other related items?

10  
11 **A.** Witness Crane's recommendation is an attempt to shortcut  
12 the ratemaking process of evaluating the Company's 2021  
13 test year capital expenditures and assessing them for  
14 inclusion in the test year rate base. I suggest that the  
15 Commission reject what witness Crane has proffered on  
16 Exhibit ACC-2, Schedules 3-5.

17  
18 **Q.** Do you have concerns with witness Crane's other plant  
19 related recommendations?

20  
21 **A.** Yes. For reasons previously stated, I suggest the  
22 Commission reject witness Crane's related fall-out  
23 adjustments to (i) Depreciation Expense reflected on her  
24 Exhibit ACC-2, Schedule 20, (ii) Property Tax Expense  
25 reflected on Exhibit ACC-2, Schedule 22, and (iii)

1 Interest Synchronization reflected on Exhibit ACC-2,  
2 Schedule 23.

3  
4 **2. Exclusion of Any New Positions over Trended 2019 O&M**  
5 **Payroll Costs and Removal of Other Related Expenses**

6 **Q.** Please summarize the Operating Income adjustments witness  
7 Crane recommended in her testimony regarding Additional  
8 Employee Expense.

9  
10 **A.** In witness Crane's Additional Employee Expense adjustment  
11 shown on Exhibit ACC-2, Schedule 8, she proposes removing  
12 all O&M payroll costs related to every new position  
13 included in the Company's claim for 2020 and 2021. In  
14 other words, witness Crane has recommended that the  
15 Company's revenue requirement should only reflect the O&M  
16 workforce level that existed during the 2019 historical  
17 base year, ignoring the effects of the significant  
18 customer growth and system expansion she otherwise  
19 acknowledges have in fact occurred when arguing that  
20 there is no need for an increase in marketing expenses.  
21 (See pages 33 and 34 of her testimony).

22  
23 **Q.** How does the Company's filing reflect O&M requirements  
24 related to the workforce that existed in the 2019  
25 historical test year and the new hires after 2019?

1     **A.**   As correctly noted on page 21 of witness Crane's  
2           testimony, the Company has trended it's 2019 actual O&M  
3           related payroll costs of \$34,671,527 by three percent  
4           annually to the 2021 test year, resulting in \$36,783,023  
5           of 2021 O&M payroll costs.   This is reflected on MFR  
6           Schedule G-2, page 19, total "Payroll trended".   Payroll  
7           O&M costs related to 2020 and 2021 new hires were  
8           reflected on the "Payroll not trended" line in that MFR  
9           and totaled \$4,282,254 for the year 2021.   This is the  
10          amount witness Crane is recommending be removed from O&M  
11          costs on Exhibit ACC-2, Schedule 8.   Details by position  
12          of the \$4,282,254 of "Payroll not trended" was provided  
13          in response to OPC's First Set of Interrogatories No. 50.

14  
15     **Q.**   Please describe further what was included in the  
16          Company's response to OPC's First Set of Interrogatories  
17          No. 50?

18  
19     **A.**   Peoples' response to OPC's First Set of Interrogatories  
20          No. 50 provided a detailed listing of each new positions  
21          budgeted to be added in 2020 and 2021, the start  
22          month/year, and the O&M related payroll cost for each  
23          year.   In addition, the response indicated the positions  
24          that had been filled at the time of the response.   For  
25          each position that was unfilled in 2020 or budgeted for

1           2021, the Company provided an explanation of the position  
2 need in the response.

3

4   **Q.**   Regarding the positions that were indicated as being  
5 filled, how much of the \$4,282,254 is related to those  
6 filled positions?

7

8   **A.**   The 2020 filled positions account for \$1,375,027 of the  
9 \$4,282,254 and is reflected on pages 4 and 5 of the  
10 Company's response to OPC's First Set of Interrogatories  
11 No. 50 (highlighted positions are unfilled, non-  
12 highlighted positions are filled).

13

14   **Q.**   Did witness Crane acknowledge the filled positions or  
15 reference the Company's response to OPC's First Set of  
16 Interrogatories No. 50?

17

18   **A.**   No.    There is no reference to OPC's First Set of  
19 Interrogatories No. 50 in witness Crane's testimony nor  
20 any acknowledgement that some of the positions accounting  
21 for the \$4,282,254 have already been filled.

22

23   **Q.**   Regarding the 2020 unfilled positions shown on the  
24 Company's response to OPC's First Set of Interrogatories  
25 No. 50, why has the Company not filled those positions?



1 **A.** Although the Company's customer growth is very strong and  
2 exceeding its 2020 budget, warm winter weather and the  
3 COVID-19 pandemic impacts on commercial customers  
4 operations has resulted in Peoples year-to-date August  
5 2020 base revenues being well below its 2020 budget  
6 projections included in its filing. As a result, Peoples  
7 is earning well below the 9.25 percent bottom of the ROE  
8 range at 8.46 percent ROE (see Peoples June 2020 Earnings  
9 Surveillance Report), which is also well below what was  
10 included in its 2020 budget. Therefore, due to the  
11 unplanned temporary earnings challenges and initial  
12 difficulties in onboarding and training new employees due  
13 to the pandemic, Peoples had temporarily held off filling  
14 20 of the 33 positions budgeted for O&M in year 2020 as  
15 shown on pages 4-5 of its response to OPC's First Set of  
16 Interrogatories No. 50.

17  
18 **Q.** Please provide an overview of the 2020 unfilled positions  
19 and 2021 budgeted positions reflected on the response to  
20 OPC's First Set of Interrogatories No. 50?

21  
22 **A.** In general, the need for the 2020 unfilled and budgeted  
23 2021 positions is related to (i) the Company's strong  
24 customer growth, (ii) ensuring safe operations of an  
25 expanding system, (iii) meeting increasing and rapidly

1           evolving customer expectations, and (iv) increased  
2           resources to support business development and data  
3           analytics. As mentioned previously, a need explanation  
4           for each of the 2020 unfilled positions and new 2021  
5           budgeted positions were provided in the response to OPC's  
6           First Set of Interrogatories No. 50, pages 2-3. Further  
7           details are included in the rebuttal testimony of  
8           witnesses Wall, O'Connor and Buzard.

9  
10       **Q.**    What do you suggest the Commission do with witness  
11           Crane's recommendation to eliminate all O&M costs related  
12           to the Company's new 2020 and 2021 positions?

13  
14       **A.**    Once again witness Crane is making an arbitrary  
15           recommendation to sweep out the Company's claim with no  
16           specific support. Justifications for the unfilled 2020  
17           positions and to be filled positions in 2021 have been  
18           provided. Therefore, I recommend the Commission reject  
19           witness Crane's indiscriminate recommendation to not  
20           include any new positions above the 2019 workforce  
21           included in the Company's 2021 claim for O&M related  
22           payroll.

23  
24       **Q.**    Do you agree with witness Crane's other recommendations  
25           related to the new 2020 and 2021 positions?

1     **A.**   No.   After recommending elimination of all 2020 and 2021  
2     new positions O&M payroll costs, witness Crane then  
3     suggests a reduction to related Payroll Tax Expense, 401K  
4     Expense and to remove O&M costs associated with  
5     additional employees such as travel, meals, mileage,  
6     uniforms etc.  These recommended adjustments are included  
7     in Exhibit, AAC-2, Schedules 11 and 12.  As stated above,  
8     justification for the 2020 and 2021 new positions has  
9     been provided which also supports the Company's claim for  
10    these related expenses.  In addition, I disagree with  
11    witness Crane's recommendation to completely remove the  
12    Company's claim for incremental increases in Information  
13    Technology ("IT") of \$607,242, Human Resources ("HR") of  
14    \$246,994 and Other Shared Services Expenses of \$65,652  
15    (see page 26 and 27 of her testimony and Exhibit ACC-2,  
16    Schedule 12), on the basis of my response to her previous  
17    recommendation to eliminate all new positions.  I also  
18    note that on page 26 of her testimony, witness Crane made  
19    a transposition error on the HR item by stating it was  
20    \$264,994 rather than the correct amount of \$246,994 shown  
21    on Exhibit ACC-2, Schedule 12.

22  
23    **Q.**   Please explain further your disagreement with witness  
24    Crane's recommendations on the IT, HR and Other Shared  
25    Services Allocation Expense?

1     **A.**    I generally agree with witness Crane' statement that  
2            increased headcount is the cost causative driver for  
3            assessing IT, HR and Other shared services.  However,  
4            witness Crane is incorrect in her implied inference that  
5            both the 2020 and 2021 budgeted new positions impact the  
6            IT, HR and Other shared services assessments.  The three  
7            referenced shared services assessments for 2021 were  
8            budgeted based on the 2020 budgeted positions.  
9            Therefore, Peoples' 2021 budgeted new positions did not  
10           affect the 2021 IT, HR or Other shared service  
11           assessments.  In addition, regarding the \$607,242 of  
12           incremental 2021 IT assessments, approximately 33 percent  
13           of this is due to increased costs for additional  
14           enterprise software system support in the IT department  
15           at Tampa Electric, as indicated in the Company's response  
16           to OPC's First Set of Interrogatories No. 50, page 7.  
17           Therefore, approximately one-third of the \$607,242 is not  
18           related to Peoples adding new positions as inferred by  
19           witness Crane.

20  
21     **3.    Exclusion of Any Inflation Considerations for Trending**  
22            **2019 Non-Labor Costs to 2021**

23     **Q.**    Please summarize the adjustment witness Crane recommended  
24            in her testimony regarding Other (Non-Labor) Trended  
25            Expense.

1     **A.**   As reflected in witness Crane's Exhibit ACC-2, Schedule  
2           13, she proposes eliminating any inflation consideration  
3           in trending 2019 non-labor O&M expense to the 2021  
4           projected test year.   The primary basis of witness  
5           Crane's proposal is to not use Consumer Price Index  
6           ("CPI") forecasts for general inflation trending of non-  
7           labor O&M expense.

8  
9     **Q.**   Please explain your disagreement with witness Crane's  
10          recommendation to not use CPI forecasts for trending Non-  
11          Labor O&M expense.

12  
13    **A.**   Witness Crane's recommendation disregards the Commissions  
14          long-standing practice of utilizing Consumer Price Index  
15          - All Urban ("CPI-U") as an acceptable general inflation  
16          index for evaluating and assessing utilities cost of  
17          service trends over years.   Specifically, the Commission  
18          has precedent in utilizing CPI-U on MFR Schedules C-34  
19          and C-37.   In addition, in the Company's prior rate case  
20          filings it has used CPI-U to trend its non-labor costs on  
21          MFR Schedule G-2, and it has been accepted by the  
22          Commission.   For witness Crane to question the use of  
23          CPI-U for trending historical base year cost to the  
24          projected test year is questioning the judgment and  
25          decisions made by all the prior Commissions in prior rate

1 case orders. The CPI-U is a reasonable indication of  
2 general inflation for use in determining the projected  
3 test O&M revenue requirements for projected test years  
4 rate cases. Furthermore, witness Crane's statements  
5 regarding using CPI for Energy Services and for CPI Gas  
6 Service is inappropriate and unreasonable as volatility  
7 in those indexes primarily reflects reductions in  
8 commodity prices of natural gas and oil.

9  
10 **Q.** Is Peoples use of Moody's inflation forecast of 2.2  
11 percent for 2020 and 2021 consistent with the  
12 Commission's prior acceptance of Moody's in the Company's  
13 last rate case?

14  
15 **A.** Yes. In Order No. PSC-09-0411-FOF-GU, page 22-23, the  
16 CPI-U forecast from Moody's Economy.com was ultimately  
17 used by the Commission for determining the Inflation  
18 trend factor.

19  
20 **Q.** Has the Company received an updated forecast from  
21 Moody's?

22  
23 **A.** Yes. Moody's updated forecast now being used by the  
24 Company reflects expected CPI-U inflation of 2.5 percent  
25 for 2021, 2.8 percent in 2022 and 2.4 percent from 2023-

1 2027 (see Exhibit No. \_\_\_ SPH-2, Document No. 1). As  
2 mentioned by witness Crane on page 28 of her testimony,  
3 the CPI-U data for the twelve months ended July 2020  
4 reflects a 1.0 percent inflation rate. This low 1.0  
5 percent CPI-U rate was significantly impacted by  
6 decreases in energy prices including natural gas, which  
7 has rebounded due in part to production disruption from  
8 Hurricane Laura in late August. Moody's forecast for  
9 2021 forward reflects increased inflationary pressures  
10 from the \$2 trillion CARES Act fiscal stimulus package  
11 and the potential for further stimulus, including Federal  
12 Reserve actions, to bolster the U.S. economy through the  
13 pandemic. On August 27, 2020, Federal Reserve Chairman  
14 Jerome Powell announced a major policy shift to "average  
15 inflation targeting", which signals the central bank will  
16 be more inclined to allow inflation to run higher than  
17 the standard two percent target before hiking interest  
18 rates. This was further reiterated by the Federal  
19 Reserve announcement on September 16, 2020. In summary,  
20 assuming zero inflation in this docket as recommended by  
21 witness Crane is not reasonable.

22  
23 **Q.** Witness Crane mentions on page 27 of her testimony that  
24 certain costs were adjusted by a Customer Growth X  
25 Inflation factor. As mentioned previously, for the

1 twelve-months ended July 2020, witness Crane stated that  
2 CPI-U was 1.0 percent. Over that same period, what was  
3 Company's actual Customer Growth?  
4

5 **A.** From July 2019 to July 2020, the Company's customer count  
6 has grown from 398,228 to 418,813 (see Exhibit No. \_\_\_  
7 SPH-2, Document No. 2). That represents a 5.2 percent  
8 customer growth rate compared to the 3.32 percent rate  
9 assumed for 2020 on MFR Schedule G-2, pages 10-19.  
10

11 **Q.** What do you suggest the Commission do regarding any  
12 changes to the trend factors on MFR Schedule G2, pages  
13 10-19?  
14

15 **A.** As previously stated, there is a strong long-standing  
16 Commission precedent in utilizing the CPI-U as the  
17 general inflation factor. Therefore, that precedent  
18 should be recognized. If the Commission does ultimately  
19 update the CPI-U based Inflation factor, then an update  
20 to the Customer Growth factor should also be reflected in  
21 the final trend factors. Although 2020 has been a very  
22 volatile year with July actual CPI-U data suggesting 2020  
23 general inflation has been lower and fiscal stimulus and  
24 Federal Reserve policy changes suggesting 2021 and beyond  
25 inflation will be higher, overall the 2.2 percent rate



1 assumed in the Company's filing for both years appears to  
2 remain a reasonable inflation factor considering Moody's  
3 long-term forecast for CPI-U that reaches as high as 2.8  
4 percent in 2022.

5  
6 **4. Misunderstanding of Short-Term Incentive Compensation**  
7 **Costs included in the Company's Claim**

8 **Q.** Do you agree with witness Crane's recommended adjustments  
9 to incentive compensation as shown on her Exhibit ACC-2,  
10 Schedule 9?

11  
12 **A.** No. As discussed in the rebuttal testimony of Company  
13 witness McQuaid, the Company overall disagrees with  
14 witness Crane's recommendations on removing financial  
15 metric-based short and all long-term incentive  
16 compensation from the revenue requirement as shown on her  
17 Exhibit ACC-2, Schedule 9. In addition, I have specific  
18 disagreement with witness Crane's proposed adjustment  
19 that deals with her misunderstanding of the actual short-  
20 term incentive compensation included in the Company's  
21 claim. Witness Crane is correct that 50 percent of the  
22 potential PSP short-term incentive awards are based on  
23 financial metrics as provided in the Company's response  
24 to OPC's First Set of Interrogatories No 10. However,  
25 what witness Crane did not understand is that there are

1 zero dollars in the Company's claim related to  
2 achievement of the PSP net income financial goal. The  
3 PSP net income goal is only paid out to PSP program  
4 participants if the Company achieves earnings above the  
5 budget, which makes this a self-funded goal. Therefore,  
6 the Company did not include any O&M in its 2021 revenue  
7 requirement for the PSP net income goal that is worth  
8 five percent of the 12 percent potential payout. The  
9 other financial metric incentive in the PSP program is  
10 the cash flow from operations goal that is worth one  
11 percent of the 12 percent potential payout that was  
12 included in the Company's claim.

13  
14 **Q.** Did witness Crane make any other errors in her statement  
15 that 50 percent of the Company's short-term incentive  
16 awards are based on financial metrics?

17  
18 **A.** Yes. In Peoples' response to OPC's First Set of  
19 Interrogatories No. 10, which is referenced in witness  
20 Crane's Exhibit ACC-2, Schedule 9, the Company provided  
21 the current Peoples Balanced Scorecard summary document.  
22 This document on Bates Stamp page 9, clearly shows the  
23 financial metric goals for net income of 35 percent and  
24 cash flow of five percent. This adds to 40 percent, not  
25 the 50 percent as stated in witness Crane's testimony.

1 The 40 percent total was also reflected in the Company's  
2 response to OPC's First Request for Production of  
3 Documents No. 14, Bates Stamp page 2070, which reflects  
4 the 2020 Balanced Scorecard Program.

5  
6 **5. Adjustment to American Gas Association's ("AGA")**  
7 **Membership Dues**

8 **Q.** Do you agree with the adjustment witness Crane has  
9 recommended on pages 30-31 of her testimony regarding  
10 lobbying activities conducted by AGA?

11  
12 **A.** No. Witness Crane claims the AGA is under reporting  
13 their lobbying activities on the invoices provided to  
14 Peoples for membership dues, which effectively is  
15 questioning AGA's integrity. After reviewing statements,  
16 she read on the AGA's website, she breezily and without  
17 evidence concludes that AGA's lobbying activities must  
18 constitute 20 percent of membership dues and that the 3.5  
19 percent explicitly stated on AGA's invoice is incorrect.  
20 She provides nothing of substance to support that  
21 conclusion. The Company's claim is based on the 3.5  
22 percent stated on AGA's invoice for lobbying activities.  
23 Therefore, I recommend that the Commission reject this  
24 proposed \$36,343 adjustment by witness Crane.

1     **6.     Removal of Additional Marketing and Advertising Expenses**

2     **Q.**    Do you agree with witness Crane's recommendation on page  
3           34 of her testimony to exclude \$829,871 of additional  
4           Advertising and Marketing expense from the Company's  
5           claim on the basis that Peoples has been successful in  
6           its past marketing efforts as evidenced by its relatively  
7           strong growth rate?

8  
9     **A.**    No.     Although Peoples has had strong customer growth  
10           exceeding Florida's population growth, there is still  
11           potential for further market penetration and retention of  
12           customers.    Retaining and adding new customers provides  
13           benefits to existing customers by increasing economies of  
14           scale and spreading fixed costs over more customers and  
15           therms.    Although Peoples is a regulated utility, using  
16           natural gas is a choice in Florida, which makes marketing  
17           an essential component to the success of the Company's  
18           long-term customer and sales growth.

19  
20    **Q.**    What is the current natural gas market penetration in  
21           Florida?

22  
23    **A.**    Currently, the market penetration of natural gas in  
24           Florida is only about 10 percent.    And while Peoples has  
25           good market penetration across its installed

1 infrastructure, it is not at 100 percent. In colder U.S.  
2 climates, natural gas is a staple in most buildings as a  
3 main heating energy resource. Due to Florida's tropical  
4 climate, there is very little heating demand which makes  
5 natural gas less prevalent and more of a choice.  
6 Therefore, there is significant room for increased market  
7 penetration as well as increased usage in the long-term  
8 if additional marketing and advertising efforts are  
9 consistently made to customers, land developers and  
10 business leaders. As Peoples expands its system to  
11 unserved areas, it is equally as important to advertise  
12 and market to these future customers about natural gas  
13 service coming to these communities.

14  
15 **Q.** Regarding customer retention, what is the opportunity for  
16 potential improvement?

17  
18 **A.** For the three-year period 2017 through 2019, almost 7,800  
19 residential and over 1,500 commercial customer premises  
20 left Peoples' system. Every year thousands of customers  
21 either leave Peoples' system entirely or take single  
22 appliances off the system and replace them with electric.  
23 Peoples can retain customers by educating them on the  
24 reasons why natural gas is an affordable, safe, and  
25 reliable energy resource as well as their options for

1 financing appliances and connecting them with qualified  
2 installation contractors and dealers of gas appliances.

3  
4 **Q.** What specifically would the increased marketing and  
5 advertising expenses cover?

6  
7 **A.** The additional marketing and advertising expenses include  
8 outside services for creative development and production  
9 of new marketing collateral and videos; digital, radio,  
10 print and television advertisements across the Company's  
11 14 service areas, digital assets like microsites, videos,  
12 applications and interactive media elements. Other costs  
13 include web hosting and gas industry-focused presentation  
14 material. Some of these service areas cover some of the  
15 most expensive media markets in Florida, which require  
16 additional expense to reach targeted audience in these  
17 markets.

18  
19 **Q.** Do you agree with witness Crane's recommendation on page  
20 34 of her testimony to eliminate the \$35,000 of  
21 additional customer communications?

22  
23 **A.** No. As mentioned in the Company's response to OPC's  
24 Second Set of Interrogatories No. 109, the objective of  
25 the additional communications is to improve the

1 customer's experience through customer research and  
2 segmentation. As discussed on page 5 of the testimony of  
3 Company witness Monica A. Whiting and adopted by witness  
4 Karen Sparkman, the Company recognizes that customers'  
5 needs and expectations are quickly changing and will  
6 continue to evolve. As part of Peoples' "Voice of the  
7 Customer" program, these costs are associated with  
8 customer research and surveys to gain insight into  
9 customers' needs, wants, perceptions, preferences, and  
10 expectations. As well, "digitalization" of commerce and  
11 the evolution of customer expectations is accelerating  
12 even faster as a result of the COVID-19 pandemic. The  
13 need for further research and customer segmentation is  
14 driven by the need to keep up with these changing  
15 expectations.

16  
17 **7. Errors made by witness Crane**

18 **Q.** Have you noted any other errors made in OPC witness  
19 Cranes testimony that are impacting her recommended  
20 adjustments?

21  
22 **A.** Yes. Below is a listing of errors made by witness Crane  
23 in her testimony that happen to inflate her recommended  
24 adjustments.

25 1. On her Exhibit ACC-2, Schedule 7, witness Crane has

1 used a recommended pre-tax amount of \$1,064,871 for  
2 Advertising and Marketing Expense from her Schedule  
3 16 rather than the correct after-tax amount of  
4 \$803,745. Witness Crane makes a similar mistake  
5 again on Schedule 7 in using a recommended pre-tax  
6 amount of \$325,676 for 401K Expense from her  
7 Schedule 11 rather than the correct after-tax amount  
8 of \$245,814. The impact of these errors is the  
9 income tax amounts of \$79,862 from Schedule 11 and  
10 \$261,126 from Schedule 16, which is then carried  
11 into her Exhibit ACC-2, Schedule 26 and multiplied  
12 by the 1.3361 Revenue Multiplier, which results in a  
13 total error of \$455,594.

14 2. On page 26, lines 1-3, witness Crane indicates she  
15 did not include the long-term incentive compensation  
16 in her recommended payroll tax adjustment because  
17 these awards are not made in cash and have  
18 potentially different tax treatment. However, she  
19 then includes long-term incentive compensation in  
20 her payroll tax adjustment calculation in Schedule  
21 10. The impact of this error is overstating her  
22 recommended payroll tax adjustment on Schedule 10 by  
23 \$89,998, which is then carried into her Exhibit ACC-  
24 2, Schedule 26 and multiplied by the 1.3361 Revenue  
25 Multiplier, which results in a total error of



1                   \$120,246.

2           3.    On page 26, lines 4-8, witness Crane states:

3                    "it is my understanding the Company's  
4                    401K claim is based on total  
5                    compensation, including short-term  
6                    incentive compensation awards that are  
7                    made in cash. Therefore, I made an  
8                    adjustment in Exhibit ACC -2, Schedule  
9                    11 to eliminate the Company's 401K match  
10                   on the labor and short-term incentive  
11                   compensation costs that I recommend be  
12                   disallowed."

13  
14           This implies that she has only included short-term  
15           incentive compensation and she has not included the long-  
16           term incentive compensation in her recommended 401K match  
17           adjustment, which would be correct. However, in her  
18           calculated adjustment on Schedule 11 she does include  
19           long-term incentive compensation in her 401K Expense  
20           adjustment, which is incorrect. The impact of this error  
21           is overstating her recommended adjustment on Schedule 11  
22           by another \$47,319, which is then carried into her  
23           Exhibit ACC-2, Schedule 26 and multiplied by the 1.3361  
24           Revenue Multiplier, which results in a total additional  
25           401K Expense adjustment error of \$63,223 on top of the

1 401K Expense error impact mentioned in item 1. above.

2  
3 **Q.** Does witness Crane make any other errors in her  
4 testimony?

5  
6 **A.** Yes. On page 45, line 18 of her testimony in her overall  
7 summary she states that her recommendation reflects  
8 revenue requirement adjustments of \$42,103,332. However,  
9 on her Revenue Requirement Summary shown on Exhibit ACC-  
10 2, Schedule 1, it indicates total adjustments of  
11 \$43,103,332. This inconsistency makes it unclear which  
12 amount is her total recommendation.

13  
14 **7. Proposed Amortization and Recovery of Certain O&M Costs**  
15 **Over 5-year Periods**

16 **Q.** Please summarize witness Crane's proposals to amortize or  
17 recover certain O&M costs over 5-year periods.

18  
19 **A.** First, on Exhibit ACC-2, Schedule 17, witness Crane  
20 proposes amortizing the Company's Rate Case Expense over  
21 a five-year period. Second, on Exhibit ACC-2, Schedule  
22 19, and on page 40 of her testimony, witness Crane  
23 proposes a five-year recovery of the New Work Asset  
24 Management O&M Expenses that cannot be capitalized by the  
25 Company due to FASB accounting rules codified under ASC

1 350-40-25. Similarly, on page 37 and 38 of witness  
2 Crane's testimony, she proposes that the Commission  
3 normalize Transmission Integrity Management Program  
4 ("TIMP") Pipeline Reassessment and Risk Analysis costs  
5 using a five-year average of the anticipated costs, based  
6 on the Company's current schedule for 2021-2025. In none  
7 of the three items does witness Crane dispute the  
8 Company's cost amounts, just the annual expense amount  
9 recognized in its 2021 test year revenue requirements.  
10

11 **Q.** Do you agree with witness Crane's proposal to amortize  
12 rate case expense over 5 years?  
13

14 **A.** No. While it is difficult to predict when Peoples will  
15 file its next best rate case, I am relatively certain it  
16 will be less than five years. Three years is an  
17 appropriate amortization period for rate case expense and  
18 no adjustment should be made.  
19

20 **Q.** Do you disagree with witness Crane's recommendation to  
21 amortize over 5 years the software implementation costs  
22 not capitalized under GAAP rules?  
23

24 **A.** No. I do not disagree with this alternative proposal to  
25 allow the Company to amortize software implementation

1 costs not capitalizable over a 5-year period. This  
2 proposed accounting treatment would be similar to rate  
3 case expenses that are amortized over a period of time,  
4 which is a long-standing Commission practice.

5  
6 **Q.** Do you disagree with witness Crane's recommendation to  
7 normalize TIMP Pipeline Reassessment and Risk Analysis  
8 costs to reflect a five-year average of the anticipated  
9 costs?

10  
11 **A.** No. I do not disagree with witness Crane's alternative  
12 proposal to annually amortize \$1,439,980 as shown on  
13 Exhibit ACC-2, Schedule 18, as long as implementation of  
14 this alternative proposal to normalize the TIMP costs is  
15 fair to both customers and the Company. There is  
16 Commission precedent to levelize certain costs where  
17 significant fluctuations occur through reserve  
18 accounting. In Order No. PSC-98-0739-FOF-GU, pages 2-3,  
19 the Commission approved the Company's request for reserve  
20 accounting due to wide fluctuations in annual costs for  
21 environmental remediation expense. Reserve accounting  
22 treatment levelizes the expenses included in revenue  
23 requirements and the earnings impact on Peoples, thereby  
24 being fair to both customers and the Company. As stated  
25 by witness Crane on page 38 of her testimony, these TIMP

1 Pipeline Reassessment and Risk Analysis costs can vary so  
2 significantly from year-to-year. Therefore, I recommend  
3 that if the Commission adopts witness Crane's proposal to  
4 normalize TIMP Pipeline Reassessment and Risk Analysis  
5 costs at \$1,439,980 annually, then Commission should also  
6 authorize the Company to apply reserve accounting  
7 treatment for these fluctuating TIMP costs consistent  
8 with the prior Commission decision in Order No. PSC-98-  
9 0739-FOF-GU.

10  
11 **SUMMARY**

12 **Q.** Please summarize your rebuttal testimony.

13  
14 **A.** I have delineated my concerns and disagreements regarding  
15 the recommendations included in the testimony of witness  
16 Crane. Many of witness Crane's assertions contain  
17 positions that are inaccurate, unreasonable,  
18 inappropriate, and/or not in accordance with prior  
19 Commission practice and decisions. I have presented  
20 facts and information that support the Company's  
21 petition, the reasonableness and prudence of amounts and  
22 positions presented by Peoples, and the appropriateness  
23 of the revenue requirement contained in its filing.

24  
25 **Q.** Does this conclude your rebuttal testimony?

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**A.** Yes, it does.

PEOPLES GAS SYSTEM  
DOCKET NO. 20200051-GU  
DOCKET NO. 20200166-GU  
WITNESS: HILLARY

EXHIBIT

OF

SEAN P. HILLARY

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Peoples Gas System  
Moody's Updated Inflation Forecast

Consumer Price Index-All Urban Consumers (CPI-U)

Series Catalog:  
Series ID : CUUR0000SA0  
Not Seasonally Adjusted  
Area : U.S. city average  
Item : All items  
Base Period : 1982-84=100

Source for History: <http://stats.bls.gov/cpihome.htm>; Most Requested Series: <http://146.142.4.24/cgi-bin/surveymost?cu>; U.S. All items, 1982-84=100 - CUUR0000SA0, not seasonally adjusted

Source for Forecast: Moody's Analytics; CPI - All Urban Consumers, Not Seasonally Adjusted

Data:

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	
1991	135	135	135	135	136	136	136	137	137	137	138	138	136	
1992	138	139	139	140	140	140	141	141	141	142	142	142	140	3.0%
1993	143	143	144	144	144	144	144	145	145	146	146	146	145	3.0%
1994	146	147	147	147	148	148	148	149	149	150	150	150	148	2.6%
1995	150	151	151	152	152	153	153	153	153	154	154	154	152	2.8%
1996	154	155	156	156	157	157	157	157	158	158	159	159	157	3.0%
1997	159	160	160	160	160	160	161	161	161	162	162	161	161	2.3%
1998	162	162	162	163	163	163	163	163	164	164	164	164	163	1.6%
1999	164	165	165	166	166	166	167	167	168	168	168	168	167	2.2%
2000	169	170	171	171	172	172	173	173	174	174	174	174	172	3.4%
2001	175	176	176	177	178	178	178	178	178	178	177	177	177	2.8%
2002	177	178	179	180	180	180	180	181	181	181	181	181	180	1.6%
2003	182	183	184	184	184	184	184	185	185	185	185	184	184	2.3%
2004	185	186	187	188	189	190	189	190	190	191	191	190	189	2.7%
2005	191	192	193	195	194	195	195	196	199	199	198	197	195	3.4%
2006	198	199	200	202	203	203	204	204	203	202	202	202	202	3.2%
2007	202	203	205	207	208	208	208	208	208	209	210	210	207	2.8%
2008	211	212	214	215	217	219	220	219	219	217	212	210	215	3.8%
2009	211	212	213	213	214	216	215	216	216	216	216	216	215	-0.4%
2010	217	217	218	218	218	218	218	218	218	219	219	219	218	1.6%
2011	220	221	223	225	226	226	226	227	227	226	226	226	225	3.2%
2012	227	228	229	230	230	229	229	230	231	231	230	230	230	2.1%
2013	230	232	233	233	233	234	234	234	234	234	233	233	233	1.5%
2014	234	235	236	237	238	238	238	238	238	237	236	235	237	1.6%
2015	234	235	236	237	238	239	239	238	238	238	237	237	237	0.1%
2016	237	237	238	239	240	241	241	241	241	242	241	241	240	1.3%
2017	243	244	244	245	245	245	245	246	247	247	247	247	245	2.1%
2018	248	249	250	251	252	252	252	252	252	253	252	251	251	2.4%
2019	252	253	254	256	256	256	257	257	257	257	257	257	256	1.8%
2020													258	0.8%
2021													264	2.5%
2022													272	2.8%
2023													279	2.6%
2024													286	2.6%
2025													293	2.4%
2026													300	2.3%
2027													307	2.3%
2028													314	2.4%
2029													321	2.4%
2030													329	2.4%

Forecast from Moody's

2.4%

**PEOPLES GAS SYSTEM  
CUSTOMER GROWTH  
CUSTOMER COUNT - JULY 2020 vs. JULY 2019**

	<u>July 2020</u>	<u>July 2019</u>	<u>Variance</u>
Residential	381,036	361,260	19,776
Commercial	37,710	36,901	809
Industrial	57	56	1
Off-System Sales	<u>10</u>	<u>11</u>	<u>(1)</u>
Total	<u><u>418,813</u></u>	<u><u>398,228</u></u>	<u><u>20,585</u></u>
Customer Growth	5.2%		



**BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 20200051-GU  
IN RE: PETITION FOR BASE RATE INCREASE BY  
PEOPLES GAS SYSTEM**

**AND**

**DOCKET NO. 20200166-GU  
IN RE: PETITION FOR APPROVAL OF 2020  
DEPRECIATION STUDY BY PEOPLES GAS SYSTEM**

**REBUTTAL TESTIMONY  
OF  
CHARLENE MCQUAID**

**FILED: 09/21/2020**

1                                   **BEFORE THE PUBLIC SERVICE COMMISSION**

2                                                           **REBUTTAL TESTIMONY**

3                                                                                   **OF**

4                                                                                                           **CHARLENE MCQUAID**

5  
6   **Q.**   Please state your name, business address, occupation and  
7           employer.

8  
9   **A.**   My name is Charlene McQuaid. My business address is 5151  
10           Terminal Road, Halifax, Nova Scotia, Canada. I am employed  
11           by Emera Inc. (the "Company").

12  
13   **Q.**   Are you the same Charlene McQuaid who filed direct  
14           testimony in this proceeding?

15  
16   **A.**   Yes, I am.

17  
18   **Q.**   What is the purpose of your rebuttal testimony?

19  
20   **A.**   The purpose of my rebuttal testimony is to address serious  
21           errors and shortcomings in the prepared direct testimony of  
22           witness Andrea C. Crane, testifying on behalf of the Office  
23           of Public Counsel.

24  
25   **Q.**   Have you prepared an exhibit supporting your rebuttal

1 testimony?

2

3 **A.** No, I have not.

4

5 **Q.** Please summarize the key concerns and disagreements you  
6 have regarding the substance of witness Crane's testimony.

7

8 **A.** I disagree with witness Crane's recommendation that  
9 incentive compensation costs that are tied to financial  
10 metrics be removed from the rate case and instead be  
11 recovered from the Company's shareholders. I further  
12 disagree that these costs do not benefit or could harm  
13 Peoples' customers.

14

15 **INCENTIVE COMPENSATION**

16 **Q.** Do you agree with witness Crane that incentive compensation  
17 based in financial metrics is inconsistent with a utility's  
18 mandate?

19

20 **A.** No, I do not. Financial measures are a standard and expected  
21 component of balanced incentive compensation plans. The  
22 argument that financial measures are not in the best  
23 interest of customers because they are tied to shareholder  
24 success is a fallacy as the two are most definitely not  
25 diametrically opposed. It is absolutely possible that both

1 groups can be aligned and benefit from the Company's  
2 financial performance.

3  
4 Strong financial performance is good for the shareholder  
5 and can also mean low cost to deliver natural gas. This is  
6 good for customers. Strong financial performance can be  
7 derived from operational efficiencies and system growth  
8 yields opportunities to expand and strengthen the service  
9 into areas where it does not exist, which is good for  
10 customers. Strong financial performance provides the funds  
11 to invest in social programs that are important to the  
12 public good. Strong financial performance allows the  
13 Company to maintain/improve its credit rating, which is  
14 important to ensure Peoples can continue to provide energy  
15 in an affordable manner.

16  
17 **Q.** Witness Crane recommends that the costs related to  
18 financial measures in the incentive programs be excluded  
19 from revenue requirement. Is that recommendation  
20 appropriate?

21  
22 **A.** No. There is no basis for any adjustment to incentive  
23 compensation, which includes Peoples' short-term incentive  
24 (STIP) and long-term incentive (LTIP) plans. Witness Crane  
25 has provided no study or any other evidence to suggest that

1 Peoples' total compensation program is either imprudent or  
2 unreasonable. She does not suggest an alternative method of  
3 determining how employees should be paid for the work they  
4 perform or how the prudence or reasonableness of their  
5 compensation should be judged. Incentive compensation is a  
6 portion of the total Peoples' market-based compensation  
7 program. Incentive compensation is at risk and may or may  
8 not be paid, depending on whether or not certain goals are  
9 or are not achieved. As described in detail above and in my  
10 testimony, Peoples' incentive compensation is part of an  
11 overall total compensation program. The goals provide safe,  
12 reliable service with consideration for cost containment  
13 and financial prudence. Peoples' witness Sean P. Hillary's  
14 rebuttal testimony speaks specifically to the costs  
15 included in the Company's revenue requirement.

16  
17 Accepting witness Crane's recommendation to disallow  
18 components of the incentive program as identified in  
19 witness Hillary's rebuttal testimony would adversely affect  
20 the Company's ability to attract and retain a high-quality  
21 skilled workforce. If the financial component of incentive  
22 pay was removed, then total compensation would be below  
23 market for comparable jobs putting Peoples at a competitive  
24 disadvantage in the challenge to attract and retain a  
25 talented workforce.

1 It is also worthy to note that using incentive compensation  
2 programs can be less costly than increasing base salary  
3 because incentive compensation is "at risk" and by  
4 definition not guaranteed and based on achieving  
5 objectives. The "at risk" component motivates employees to  
6 perform at high levels and can drive more efficiency which  
7 translates to direct benefits for Peoples' customers. With  
8 a balance of goals, participation in these plans helps  
9 ensure the Company's goals of providing customers with safe  
10 and reliable service is achieved. The participation also  
11 focuses on ensuring adequate return to the Company's  
12 shareholders. Both these objectives benefits customers. The  
13 first benefits customers who rely on natural gas to meet  
14 their energy needs and the second benefits customers by  
15 having a company that can attract needed capital at a  
16 reasonable cost to provide service.

17  
18 **SUMMARY**

19 **Q.** Please summarize your rebuttal testimony.

20  
21 **A.** Each component of the Company's total compensation program,  
22 including the STIP and LTIP are beneficial to customers and  
23 directly consistent with the mandate to provide safe and  
24 reliable customer service at fair prices. Incentive  
25 compensation plans are particularly important as the amount



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of award paid depends on the achievement of results. This motivates officers, leaders and employees to achieve goals focused directly or indirectly achieving the Company mandate. Peoples' total compensation program ensures the Company continues to attract and retain the skilled and talented employees needed to support achieving the Company mandate.

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

**A.** Yes, it does.



BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20200051-GU  
IN RE: PETITION FOR BASE RATE INCREASE BY  
PEOPLES GAS SYSTEM

AND

DOCKET NO. 20200166-GU  
IN RE: PETITION FOR APPROVAL OF 2020  
DEPRECIATION STUDY BY PEOPLES GAS SYSTEM

REBUTTAL TESTIMONY  
OF  
TIMOTHY O'CONNOR

FILED: 09/21/2020



1 Q. Have you prepared an exhibit supporting your rebuttal  
2 testimony?

3

4 A. No, I have not.

5

6 Q. Please summarize your areas of disagreement with witness  
7 Crane's testimony.

8

9 A. My key disagreements are as follows:

- 10 1. Witness Crane ignores the Company's need for capital  
11 expenditures to meet customer demand.
- 12 2. Witness Crane mischaracterizes the LNG Tariff and  
13 the use of LNG on Peoples' system.
- 14 3. Witness Crane ignores the Company's need to support  
15 economic development efforts.
- 16 4. Contrary to Witness Crane's opinion to not allow  
17 recovery for any new hires, increased customer  
18 demand is driving an increased need for additional  
19 employees for the Company's Compressed Natural Gas  
20 (CNG), Liquefied Natural Gas ("LNG"), and Renewable  
21 Natural Gas ("RNG") business.

22

23 **1. Reduction To Distribution Plant Rate Base**

24 Q. Please explain why you disagree with Witness Crane's  
25 proposed adjustment to capital expenditures.

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**A.** Witness Crane bases her proposed adjustment on the fact that she believes Peoples' increases in its capital spend are "speculative" projections presented on page 12, line 5, and characterizes the growth in capital spending as "explosive" presented on page 8, line 16 which suggests that growth beyond a certain unnamed amount should not be considered by the Commission. Witness Crane's testimony ignores the fact that these capital expenditures are necessary, in part, to respond to existing system reliability and capacity needs and/or near-term capacity needs of system growth resulting from increased customer demand. Other capital expenditures are needed for safety and reliability as outlined in the direct and rebuttal testimony of other Company witnesses. Since Peoples' last rate case in 2008, Florida's population has grown substantially which has helped fuel Company growth during this period. Witness Crane simply ignores the overwhelming evidence that has been presented of the tremendous customer demand and growth that the Company has been experiencing. Peoples' infrastructure has expanded to accommodate this very real growth in demand. While Witness Crane characterizes this growth as "explosive," she offers no evidence that it is not real. The Company's new residential and commercial business

1 signings have consistently grown requiring the Company to  
2 steadily increase its capital expenditures to meet this  
3 growing demand for safe, affordable, and reliable natural  
4 gas. These new customers come online over many years and  
5 these customer commitments are incorporated into planned  
6 2021 and future years' capital expenditures.  
7

8 **Q.** Are the capital projects undertaken by Peoples intended  
9 to expand into speculative activities or to enter  
10 competitive markets as witness Crane suggests on page 10,  
11 lines 11-17 of her testimony?  
12

13 **A.** No. Witness Crane suggests Peoples activities are  
14 speculative with no supporting facts. The fact is that  
15 Peoples' capital projects are not speculative as  
16 evidenced by the Company's strong customer growth rates  
17 and system needs. These projects are necessary for the  
18 continued provision of safe and reliable regulated gas  
19 service. Moreover, Peoples participates in a competitive  
20 market every day because gas is a choice in Florida.  
21 Witness Crane references the LNG market related to  
22 competitive markets. Peoples has proposed an LNG tariff,  
23 but the 2021 capital expenditures do not include any  
24 capital under this proposed tariff.  
25

1 Q. Do you have any other comments regarding Witness Crane's  
2 testimony regarding capital expenditures?

3  
4 A. As provided in my original testimony, Peoples has  
5 experienced an approximate 23 percent increase in  
6 customers served since 2007. In the last two years,  
7 customer growth has increased approximately 3.5 percent  
8 per year. As presented in Company witness Sean P.  
9 Hillary's rebuttal testimony, between July 2019 and July  
10 2020, Peoples is experiencing customer growth of  
11 approximately five percent. The capital expenditures in  
12 Peoples' rate filing reflect the need to meet this  
13 customer demand. Witness Crane's testimony fails to  
14 provide any supporting data for her adjustment in capital  
15 expenditures and ignores Peoples' actual growth  
16 experience. Customers want natural gas. They like its  
17 affordability and the environmental benefits. Customers  
18 desire Peoples to provide this service as evidenced by  
19 the Company's number one ranking in J.D. Powers  
20 Residential Customer Satisfaction Studies in customer  
21 satisfaction for many consecutive years.

22  
23 **2. Mischaracterization Of The Proposed LNG Tariff And Miami**  
24 **LNG Project**

25 Q. Does the Miami LNG Project differ from what Peoples

1 proposed in its LNG tariff?

2

3 **A.** Yes. The Miami LNG project is a peak-shaving storage and  
4 regasification facility to address a system capacity need  
5 in Peoples' Miami division. Since this project is solely  
6 for internal system needs, the proposed LNG tariff would  
7 not be applicable. Peoples does not need a tariff to  
8 design, construct and operate its own LNG storage  
9 facility such as the Miami LNG facility. Peoples  
10 proposed LNG tariff would allow Peoples to offer the  
11 option of LNG services to specific customers. The Miami  
12 LNG facility will not be used for that purpose.

13

14 **Q.** Can the Miami LNG project be used to serve third party  
15 customers such as cruise ships as Witness Crane suggests  
16 in her testimony?

17

18 **A.** No. Again, the Miami LNG project is designed to only  
19 serve Peoples' distribution system. Witness Crane's  
20 hypothetical presented on page 17, lines 16-20, is not  
21 possible given the size and design of the Miami LNG  
22 project, the fact that the project location is landlocked  
23 and ignores the fact that the Port of Miami does not  
24 currently have LNG infrastructure to receive LNG or  
25 supply LNG to cruise ships. Witness Crane's hypothetical



1 is unrealistic because the expense and complexity of  
2 building an LNG pipeline to transport LNG from a  
3 landlocked location through a highly urban area to the  
4 Port of Miami would be economically unfeasible.

5  
6 **Q.** Do you have any other comments regarding Witness Crane's  
7 testimony regarding LNG?

8  
9 **A.** Witness Crane's testimony regarding Peoples Miami LNG  
10 project is based on a misunderstanding of the system need  
11 that necessitates the project as well as a  
12 misunderstanding of how the project will be designed to  
13 meet that system need. Witness Crane's testimony  
14 presented on page 17, lines 7-20 is further confused by  
15 referencing a separate docket for a proposed LNG services  
16 tariff, which is in no way connected to the Miami LNG  
17 project.

18  
19 **3. Need to support economic development efforts in Florida**

20 **Q.** Do you agree with Witness Crane's recommendation on page  
21 33, line 16 to deny increased Peoples' employee and  
22 associated expenditures related to Economic Development  
23 activities within the areas served by Peoples.

24  
25 **A.** No. It is well understood that utilities are critical

1 elements for economic development throughout Florida.  
2 Natural gas provides affordable, reliable, and safe  
3 energy that supports economic development for customers  
4 and businesses. The increased expenditures related to  
5 economic development, which are recoverable pursuant to  
6 FPSC Rule 25-7.042, enhance and support many facets of  
7 economic development in the major metropolitan and rural  
8 areas served by Peoples Gas. We support the economic  
9 vitality of Florida through funding these economic  
10 development activities that improve the quality of life  
11 for all Floridians including support to small and  
12 minority-owned businesses, attracting new jobs and  
13 businesses to Florida, and promoting Florida's goods and  
14 services.

15  
16 **4. Witness Crane's Denial Of New Employees Presented On Page**  
17 **22, Lines 3-17 Based On The Company's LNG And RNG Needs.**

18 **Q.** Please provide an overview of the additional employee  
19 requirements for Business Development.

20  
21 **A.** In Peoples' response to OPC's First Set of  
22 Interrogatories No. 50, the a position by position  
23 description for all positions Peoples' budgeted to be  
24 added in 2020 and 2021, the start month/year, and the O&M  
25 related payroll cost for each year. In addition, the

1 response provided an explanation of need for each of the  
2 2020 unfilled positions and new 2021 budgeted positions.  
3 Over fifty positions make up the total of \$4.3 million  
4 for these new positions. Company witness Richard F.  
5 Wall's and witness Hillary's rebuttal testimonies will  
6 provide further support for most of these positions.  
7 Business Development plans to add fourteen new employees.  
8 I will summarize the reasons for the added employees as  
9 follows:

- 10 1. Addition of new expertise given developing market  
11 conditions with RNG and applications for LNG.
- 12 2. Additional resources to support customer growth and  
13 add data and analytical capabilities.

14  
15 **Q.** Please describe the expertise needs for RNG.

16  
17 **A.** RNG are projects that condition biogas from landfills,  
18 wastewater treatment plants and farms to pipeline quality  
19 for injection into the pipeline system. Experience and  
20 expertise with such projects are different than  
21 traditional pipeline business development backgrounds.  
22 Peoples' currently only has one employee with RNG  
23 experience. New employee additions include three new  
24 employees which are necessary to adequately support the  
25 interest for RNG projects throughout Florida.

1 **Q.** Please describe the expertise needs for LNG.

2

3 **A.** LNG storage and regasification can provide a cost-  
4 effective solution as compared to pipeline alternatives.  
5 Peoples currently has one employee dedicated to LNG  
6 business development and does not have staff with  
7 experience in operation and maintenance of such  
8 facilities and will therefore add two new employees to  
9 provide expertise to Peoples so that it is better able to  
10 investigate and use LNG storage to enhance its system.  
11 Furthermore, customers are increasingly contacting  
12 Peoples regarding potential LNG solutions, and to support  
13 this interest and demand, Peoples will add two employees  
14 to work with potential new customers and proposed LNG  
15 solutions. Given the opportunity for Florida businesses  
16 to utilize LNG, Peoples will need experienced LNG  
17 personnel to meet this need.

18

19 **Q.** Please describe the incremental employees needed to  
20 support customer growth and for added data and analytical  
21 capabilities.

22

23 **A.** In the past, Peoples did not have employees focused on  
24 data management and analytics in support of customer  
25 growth. As the Company has grown and the range of

1 business offerings has increased, Peoples has created an  
2 analytics group that captures, aggregates, and analyzes  
3 data. These increased capabilities require employees  
4 with these skills sets. The strong customer growth, and  
5 with new business segments emerging, the capacity to  
6 collect, aggregate and analyze data for informed decision  
7 making has significantly increased. Peoples will add six  
8 employees to add capacity to handle the volume and  
9 complexity of analyses. These analyses will lead to  
10 greater customer insights, more predictive decision  
11 making, improved data quality and project plans required  
12 to meet customer demand. Furthermore, as evidenced by  
13 Peoples' actual customer growth, the Company will add one  
14 employee to support growing business development  
15 activities. This employee will assist in Peoples being  
16 as responsive as possible to the growing customer demand  
17 for natural gas throughout Florida.

18  
19 **SUMMARY**

20 **Q.** Please summarize your rebuttal testimony.

21  
22 **A.** While citing no substantive information in support,  
23 witness Crane suggests a reduction in Peoples' planned  
24 capital expenditures, demonstrates a lack of  
25 understanding regarding the planned Miami LNG project,

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ignores the value of economic development in the state of Florida and asserts that Peoples should not hire any new resources to support the fact that the demand of advanced natural gas solutions remains strong. I disagree with all of these opinions.

Furthermore, witness Crane's suggested adjustments to capital expenditures and employee additions would severely impair Peoples' ability serve existing and future customers.

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

**A.** Yes, it does.



**BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION**

**DOCKET NO. 20200051-GU  
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**AND**

**DOCKET NO. 20200166-GU  
IN RE: PETITION FOR APPROVAL OF 2020  
DEPRECIATION STUDY BY PEOPLES GAS SYSTEM**

**REBUTTAL TESTIMONY  
OF  
VALERIE STRICKLAND**

**FILED: 09/21/2020**





1 Crane's testimony that you are addressing in your  
2 rebuttal testimony.

3

4 **A.** I disagree with witness Crane in the following three  
5 areas:

6

7 1. Witness Crane's arguments presented on pages 43 - 45  
8 of her testimony about the application of F.A.C Rule  
9 25-14.004, Effect of Parent Debt on Federal Corporate  
10 Income Tax.

11 2. Witness Crane's position on page 44 of her testimony  
12 on the amount of federal tax expense the Company has  
13 requested in the projected test year.

14 3. Witness Crane's proposal on page 45 of her testimony  
15 to adjust the parent company interest adjustment  
16 using Emera Incorporated's ("Emera") capital  
17 structure.

18

19 **Q.** Why do you disagree with Witness Crane's interpretation  
20 of F.A.C Rule 25-14.004, "Effect of Parent Debt on  
21 Federal Corporate Income Tax"?

22

23 **A.** Witness Crane's logic for applying the Parent Debt  
24 Adjustment Rule misapprehends the intent of the rule.  
25 The intent of F.A.C. Rule 25-14.004 is to require an

1 adjustment to the income tax expense of a regulated  
2 company to reflect the income tax benefit of the parent  
3 debt that may have been invested as equity of the  
4 subsidiary, and has nothing to do with cash payments made  
5 to the Internal Revenue Service ("IRS") by a utility or  
6 its parent company. To the extent the rule applies, MFR  
7 Schedule C-26 properly reflects the application of the  
8 rule to Peoples.

9  
10 **Q.** Witness Crane states that there is a major disconnect  
11 between the statutory rate used to calculate the federal  
12 income taxes for ratemaking purposes and the actual taxes  
13 being paid by the consolidated group. Do you agree with  
14 this statement?

15  
16 **A.** No. The total tax expense has been calculated consistent  
17 with the Commission's longstanding policy of determining  
18 a utility's revenue requirement by calculating income tax  
19 expense on a stand-alone basis. Witness Crane has not  
20 identified a valid reason for departing from the  
21 Commission's policy for calculating income tax expense.

22  
23 **Q.** Witness Crane recommends a parent debt adjustment using  
24 the capital structure of Emera. Do you agree with this  
25 conclusion?

1 A. No. On August 31, 2020, the Company responded to Staff's  
2 Fourth Set of Interrogatories, No. 36, which requested a  
3 parent debt adjustment calculation using Emera's capital  
4 structure. Peoples' response explained that that it  
5 correctly applied the rule as provided in F.A.C Rule  
6 25.14.004 "Effect of Parent Debt on Federal Corporate  
7 Income Tax" when it concluded that Emera U.S. Holdings,  
8 Inc ("EUSHI") and not Emera, should be the parent company  
9 used for purpose of calculating a parent debt adjustment.  
10 As noted in my direct testimony, Peoples is a division of  
11 Tampa Electric Company, which is a wholly owned  
12 subsidiary of TECO Energy, Inc. TECO Energy, Inc. is a  
13 subsidiary of EUSHI, which is a subsidiary of Emera, a  
14 Canadian company. Peoples files a consolidated U.S.  
15 income tax return with EUSHI. Emera is a Canadian  
16 company that is not a party to the U.S. federal  
17 consolidated tax return, so the plain language of the  
18 rule does not impose the adjustment at the Emera level.  
19 The rule states: "the income tax expense of a regulated  
20 company shall be adjusted to reflect the income tax  
21 expense of the parent debt that may be invested in the  
22 equity of the subsidiary where a parent - subsidiary  
23 relationship exists and the parties to the relationship  
24 join in the filing of a consolidated income tax return"  
25 (emphasis added).

1           Additionally, paragraph (2) of this rule provides that  
2           "where the regulated utility is a subsidiary of tiered  
3           parents, the adjusted income tax effect of the debt of  
4           all parents invested in the equity of the subsidiary  
5           utility shall reduce the income tax expense of the  
6           utility". Since EUSHI is the highest tiered parent and  
7           the ultimate parent company which files the U.S.  
8           consolidated tax return, and Emera does not join in the  
9           filing of a consolidated U.S. income tax return with  
10          Peoples, the Company used the capital structure of EUSHI  
11          parent for the purpose of calculating the parent debt  
12          adjustment. Witness Crane's view of how the parent debt  
13          adjustment rule should be applied misapplies the plain  
14          language of the rule.

15  
16          **SUMMARY**

17          **Q.** Please summarize your rebuttal testimony.

18  
19          **A.** I have described the concerns and disagreements I have  
20          regarding the substance of witness Crane's testimony.  
21          Her assertions contain a variety of points that are not  
22          only inaccurate, but also in contradiction with the  
23          Commission's longstanding policy. I have presented facts  
24          and information that support Peoples' position on the  
25          parent company debt adjustment and the appropriateness of

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the conclusions reached by Peoples with respect to the parent company debt adjustment.

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

**A.** Yes, it does.



BEFORE THE  
FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 20200051-GU  
IN RE: PETITION FOR BASE RATE INCREASE BY  
PEOPLES GAS SYSTEM

AND

DOCKET NO. 20200166-GU  
IN RE: PETITION FOR APPROVAL OF 2020  
DEPRECIATION STUDY BY PEOPLES GAS SYSTEM

REBUTTAL TESTIMONY  
OF  
RICHARD F. WALL

FILED: 09/21/2020



1 Q. Have you prepared an exhibit supporting your rebuttal  
2 testimony?

3

4 A. No, I have not.

5

6 Q. Please summarize the key concerns and disagreements you  
7 have regarding the substance of witness Crane's  
8 testimony.

9

10 A. My key concerns and disagreements are as follows:

11 1. I disagree with witness Crane's unwarranted removal  
12 of the 2021 plant-in-service and construction work  
13 in progress ("CWIP") net additions from the  
14 Company's 2021 rate base.

15 2. I disagree with witness Crane's assertion that there  
16 will likely be significant delays in project  
17 construction because of the COVID-19 pandemic which  
18 would reduce plant-in-service rate base.

19 3. I disagree with witness Crane's assertion that the  
20 capital costs are inflated to reflect enhancements  
21 in Peoples' system to allow for future Liquified  
22 Natural Gas ("LNG") service.

23 4. I disagree with witness Crane's unsupportable  
24 recommendation to reduce by \$350,000 the Company's  
25 budget for incremental engineering services and



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training expenses; and,

5. I disagree with witness Crane's recommendation to remove all new employee resources from the 2021 budget. In, addition, I disagree with witness Crane's conclusion that \$163,200 in operation employees' expenses and materials costs should be disallowed.

**1. Plant In Service And CWIP For 2021 Additions**

**Q.** Do you agree with witness Crane's argument on pages 10-16 of her testimony that the 2021 net capital additions should be removed from the Company's rate base?

**A.** No, I do not agree.

**Q.** Why not?

**A.** As discussed in my direct testimony and the testimony of Company witness Sean P. Hillary, Peoples' capital requirements are determined through a rigorous budgetary process with detailed reviews which occur at various levels throughout the Company, including the Board of Directors. This process ensures that Peoples' capital allocation is made on projects which are necessary to improve system reliability, enhance operating safety

1 and/or allow Peoples to reasonably meet future customer  
2 growth. Witness Crane's removal of the 2021 net plant-  
3 in-service and CWIP additions is completely arbitrary and  
4 contains no analysis of the merits and/or need of any  
5 individual project.

6  
7 My direct testimony, and Peoples' responses to  
8 interrogatories on the status of the individual projects  
9 listed in the capital budget, have shown that there is a  
10 supportable need for these sustaining, municipal  
11 improvement, growth (mains and services), etc. projects.  
12 Witness Crane has not provided any evidence that these  
13 projects are not needed, but rather simply asserts that  
14 the spend should be less.

15  
16 **Q.** Do you agree with witness Crane's conclusions that  
17 Peoples' capital growth during the 2020 - 2021 period is  
18 ambitious and therefore requires a downward adjustment?  
19

20 **A.** No, I do not agree. Witness Crane's conclusions  
21 completely ignore the Company's need to invest in its  
22 natural gas distribution systems to enable operational  
23 safety and reliability, and in customer based main and  
24 services related expansion, including:

25 1. The capital spending is needed to respond to

1 Peoples' increasing number of customers which will  
2 continue into 2021. Witness Crane does not offer  
3 any evidence that Peoples will not continue to add  
4 customers or will not have to continue to maintain  
5 and improve its systems.

6 2 The capital spending is required to support Peoples'  
7 system reliability and safety needs which will  
8 continue to grow into 2021 for reasons stated in my  
9 original testimony. Again, witness Crane offers  
10 only conclusory speculation, rather than evidence,  
11 to suggest the spending needs for safety and  
12 reliability are not required.

13 3 Witness Crane's assertion that COVID-19 will delay  
14 construction projects is without evidence and is  
15 simply not true.

16  
17 **Q.** Do you agree with witness Crane that construction delays  
18 will be caused by COVID-19?

19  
20 **A.** No, I do not agree.

21  
22 **Q.** Why not?

23  
24 **A.** There is no indication that COVID-19 has been an  
25 impediment to the pace of construction. In fact, housing

1 construction around the state has remained steady,  
2 including the consistent flow of service requests for the  
3 installation of residential service lines in each of the  
4 contracted residential developments. From March 2020,  
5 the beginning of the COVID-19 epidemic, the Company has  
6 been able to successfully maintain engineering and design  
7 services, construction materials, and construction  
8 contractor crews to meet the Company's construction  
9 needs. Natural gas service and the construction to serve  
10 Peoples' customer's energy needs is considered an  
11 essential service which means that there have been no  
12 government-imposed halts in construction. And, because  
13 natural gas pipeline construction workers do not  
14 generally need to be in close contact with one another,  
15 or with customers, social distance restrictions can be  
16 easily met while continuing to adhere to a normal  
17 construction schedules and the related pipeline  
18 construction and installation practices.

19  
20 **Q.** Have there been significant delays in the 2020 and 2021  
21 capital budget projects?

22  
23 **A.** No, there have not been any significant delays in the  
24 construction schedule. There have been projects which  
25 have been cancelled or deferred and these, along with the

1 reasons for the cancellation, are identified in Peoples'  
2 response to Staff's Seventh Request for Production of  
3 Documents No. 15a.

4  
5 Some projects have temporarily been placed on hold  
6 because of changes in Company priorities, such as the  
7 Miami office building. The Company does not consider  
8 these to be construction delays. These projects have  
9 been replaced by other priority projects as discussed in  
10 witness Hillary's rebuttal testimony and the Company's  
11 revised capital budget for 2020 and 2021 as presented in  
12 response to Staff's Seventh Request for Production of  
13 Documents No. 15a.

14  
15 Generally, delays that have occurred have been minor and  
16 the result of typical project logistics and normal  
17 coordination issues such as extended permit wait times  
18 or more onerous permit conditions, adverse weather,  
19 awaiting service agreements to be signed by customers or  
20 awaiting for activities to be completed that are outside  
21 the Company's control, such as coordinating pipeline  
22 installations involving roadway construction that depends  
23 on multiple utility/agency (Water/Sewer, Power, Telecom,  
24 Drainage, etc.) infrastructure placement related  
25 coordination, and the associated needs of differing

1 construction projects and crews.

2  
3 **Q.** Witness Crane states on page 11 of her testimony that a  
4 portion of the Southwest Florida project is now projected  
5 to be delayed until March 2021. Is this correct?

6  
7 **A.** No, this is not correct. In fact, the Southwest Florida  
8 main is substantially complete and currently in the final  
9 testing and activation phase. The project is ahead of  
10 schedule and the Company anticipates it will be completed  
11 and in service by the end of September 2020.

12  
13 **Q.** Do you agree with witness Crane's conclusion that Peoples  
14 will not be able to meet its construction schedule?

15  
16 **A.** No, I do not agree. Construction is frequently performed  
17 by external subcontractors working under established  
18 agreements (blanket contracts and specific large project  
19 bid/awarded contracts) and as a result Peoples can  
20 execute its increased capital spending program by  
21 expanding and flexing its workforce through contract  
22 service for additional engineering, project management  
23 and construction services. Peoples has a solid track  
24 record in both its construction management and in  
25 ensuring timely and effective construction performance in

1 the completion of its capital projects. Peoples ensures  
2 project performance through the quality of the Company's  
3 project management team, and adherence to design, safety,  
4 and overall craftsmanship and by meeting construction  
5 objectives and targeted deadlines.

6  
7 There is no reason to expect that Peoples will not be  
8 able to complete the construction requirements of the  
9 projects currently provided in the 2020/21 capital  
10 budget. Peoples is on track with respect to its  
11 construction schedule, the details of which are provided  
12 in Peoples' response to Staff's Seventh Request for  
13 Production of Documents No. 15a.

14  
15 **Q.** Is it normal practice for Peoples to modify its capital  
16 budget during the year?

17  
18 **A.** Yes, it is normal practice for the capital budget to be  
19 modified throughout the year to give effect to increased  
20 project work performance and/or delays which arise due to  
21 permitting, changes in the customer's priorities, and to  
22 reflect new projects which come up during the year which  
23 were not previously considered in the capital budgeting  
24 process. The construction schedule is fluid and some  
25 projects are completed earlier than expected while others

1 are completed later.

2

3 **Q.** Are you confident that the sustaining projects contained  
4 in the updated capital budget and the capital reforecast  
5 provided in the Company's response to Staff's Seventh  
6 Request for Production of Documents No. 15a are prudent?

7

8 **A.** I am confident that the sustaining projects reflected in  
9 the capital budget and the capital reforecast as  
10 presented in the Company's response are prudent,  
11 reasonable, and necessary for the efficient, safe, and  
12 reliable operation of Peoples' natural gas business.

13

14 **2. Engineering Services And Training Expenses**

15 **Q.** Do you agree with witness Crane that the \$350,000 of  
16 engineering services and the \$50,000 of training costs  
17 should be removed from the Company's filing?

18

19 **A.** No, I do not agree. These engineering and training  
20 expenses are intended to proactively address risk  
21 mitigation and specific lessons learned from operating  
22 failures and associated gas leaks and subsequent  
23 explosions in Merrimack Valley, Massachusetts. As a  
24 result of the Merrimack Valley incident, there has been  
25 increased emphasis on requiring a higher level of



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engineering oversight on projects.

These efforts and the related expenses are a part of the Company's ongoing overall improvement plans to properly prepare for additional increasing regulatory and safety related performance expectations/requirements. The results of this effort are also expected to require the Company to have Professional Engineer ("PE") resources who will directly review, sign and seal construction design drawings and plans and, provide pre-construction procedural reviews of the steps and requirements for the introduction of natural gas into the pipeline.

Witness Crane simply ignores the necessity of spending money on these activities in order to prevent similar occurrences on Peoples' system.

**Q.** How was the \$300,000 of engineering services determined?

**A.** The \$300,000 engineering services expense is to provide for an external review of the Company's processes as a result of recent events in the Merrimack Valley. Peoples' has currently engaged an external resource to review the Company's current processes and procedures; to provide recommendations of additional processes to

1 mitigate the risk and specific programs and process  
2 improvements to be implemented. These efforts and the  
3 related expenses are a part of the Company's overall  
4 improvement plans to properly prepare for increasing  
5 regulatory and safety related performance expectations.  
6

7 **Q.** What will be the focus of the external review?  
8

9 **A.** The external consultant will focus on the following:

10 1. Complete a review of Peoples' current internal  
11 engineering design practices, including the review  
12 of the types of work activity done by Company  
13 engineers to identify areas where technical  
14 improvements could be made; a review of the  
15 Company's specific technical processes to benchmark  
16 against industry best practices; and, a review of  
17 Peoples' workflow to ensure proper design oversight  
18 and sign off is provided for major projects that may  
19 require PE sign off in the future.

20 2. Complete a review of the Company's engineering  
21 standards and identify areas of improvements; to  
22 benchmark key Company standards with industry best  
23 practices; to identify additional engineering  
24 standards that may be necessary; and, to review

1           Company protocols that ensure standards are current  
2           and adequately reviewed on a regular basis.

3           3. To review the Company's construction standards and  
4           identify areas of improvements; to benchmark these  
5           key construction standards with industry best  
6           practices; to identify key construction activities  
7           and practices that may require a higher level of  
8           technical oversight or PE review and sign off; and  
9           to review protocol for ensuring construction  
10          standards are current and adequately reviewed on a  
11          regular basis.

12  
13       **Q.** What are the training services of \$50,000 for and what  
14       supports the need for these to be included in the rate  
15       case submission?

16  
17       **A.** As part of the Company's efforts to improve the technical  
18       competencies of designers and engineers the Company plans  
19       to incorporate a structured technical training program  
20       for all engineering technicians and designers moving  
21       forward. In 2021 the Company plans to retain and utilize  
22       the Gas Technology Institute ("GTI") to conduct multiple  
23       onsite training workshops covering gas transmission,  
24       distribution and measurement and regulator design,  
25       regulatory requirements, and safety considerations.

1     **3.    LNG Service**

2     **Q.**    Do you agree with witness Crane's assertion that the  
3            capital costs presented in the rate case filing are  
4            inflated to reflect enhancements in Peoples' system to  
5            allow for the provision of LNG?

6  
7     **A.**    No, I do not agree.

8  
9     **Q.**    Why not?

10  
11    **A.**    On page 17 line 21 of witness Crane's testimony she  
12            states

13                "my adjustment to include no more than the  
14                December 31, 2020 plant-in-service balance  
15                in the required revenue requirement also  
16                recognizes the Company has not demonstrated  
17                that the overall level of additions to  
18                transmission and distribution facilities are  
19                adequately allocated to any demand placed on  
20                the system by the Company's planned entry  
21                into the facilities-based competitive  
22                provision of LNG services under the proposed  
23                tariff."

24  
25            This suggestion is to remove all 2021 capital

1 expenditures from the revenue requirement calculation is  
2 careless and completely unsubstantiated. None of  
3 Peoples' capital expenditures within the 2020 or 2021  
4 capital budget or reforecast are necessitated by the  
5 proposed LNG tariff.

6  
7 **4. Employee Resources**

8 **Q.** Do you agree with witness Crane's recommendation to  
9 disallow the \$4.3 million in new employee positions?

10  
11 **A.** No, I do not agree. Peoples' response to OPC's First Set  
12 of Interrogatories No. 50 provided a position by position  
13 description of positions budgeted to be added in 2020 and  
14 2021, the start month/year, and the O&M related payroll  
15 cost for each year. In addition, the response provided a  
16 need explanation for each of the unfilled positions and  
17 indicated the positions that had been filled at the time  
18 of the response. As discussed by witness Hillary on  
19 pages 13 -14 of his rebuttal testimony the \$4.3 million  
20 should be reduced by \$1.4 million for the positions which  
21 have been filled, resulting in a net amount of \$2.9  
22 million. Included in the \$2.9 million are 31 new hires  
23 in the areas of gas operations, pipeline safety and  
24 pipeline operations compliance responsibilities, all of  
25 which are roles necessary to support Peoples' operations

1 and to maintain system safety and reliability.

2

3 **Q.** Please explain why there are unfilled positions in the  
4 gas operations, pipeline safety and pipeline operations  
5 compliance responsibilities.

6

7 **A.** Due to unplanned 2020 earnings challenges plus the very  
8 specific restrictions and initial difficulties onboarding  
9 and training new hires due to the pandemic, the Company  
10 has temporarily held off filling some of the 2020  
11 budgeted positions reflected in the Company's response to  
12 OPC's First Set of Interrogatories No. 50.

13

14 **Q.** Please explain the purpose, and general responsibilities  
15 for these 2020 and 2021 new employee positions.

16

17 **A.** As provided in Peoples' response to OPC's First Set of  
18 Interrogatories No. 50 these employee positions are  
19 needed to effectively, efficiently and safely manage  
20 Peoples operating system by providing the staffing  
21 needed in order to perform customer service and billing,  
22 field service, emergency response, engineering and  
23 construction, inspection, 811 one-call, maintenance,  
24 compliance and safety related responsibilities.

25

1 Q. What is the need for the additional \$163,200 of  
2 Operations Employee expenses and Materials costs for  
3 additional staffing in the 2021 test year?  
4

5 A. As Peoples expands the staffing of its operational teams,  
6 it is necessary to add employee expenses to support their  
7 annual activities. These staff positions incur employee  
8 expenses related to tools & equipment, uniforms, training  
9 and travel, and other incidental expenses. The increase  
10 of \$163,200 is to adequately provide for the expansive  
11 territory being served by critical resources that are  
12 dedicated to operating these natural gas systems and  
13 pipelines, and safely serving Peoples' customers, and the  
14 general public in each of the Company's 14 service areas.  
15

16 Witness Crane's recommendation to eliminate these  
17 expenses on pages 26 - 27 of her testimony ignores their  
18 necessity.  
19

20 **SUMMARY**

21 Q. Please summarize your rebuttal testimony.  
22

23 A. I have identified and addressed a number of serious  
24 errors and shortcomings in the testimony of witness  
25 Crane. She repeatedly and inaccurately identified

1 specific reductions and disallowances without citing  
2 specific facts, supporting information and or  
3 quantitative basis for her positions. I have presented  
4 facts and information that accurately identifies and  
5 supports the Company's petition and its plans, active  
6 programs, and ongoing performance results.

7  
8 In summary, I have shown that the removal of the 2021  
9 plant-in-service and CWIP net additions from the  
10 Company's 2021 rate base is unwarranted; that there have  
11 not been significant delays in Peoples' project  
12 construction schedule as a result of the COVID-19  
13 pandemic; that the capital costs are not inflated to  
14 reflect enhancements in Peoples' system to allow for  
15 future LNG service; that the incremental engineering  
16 services and training expenses of \$350,000 are necessary  
17 and needed; that the new employee additions for 2020 and  
18 2021 are necessary and needed to ensure system safety and  
19 reliability; and that the \$163,200 in Operation Employees  
20 expenses and materials costs should not be disallowed as  
21 recommended by witness Crane.

22  
23 **Q.** Does this conclude your rebuttal testimony?

24  
25 **A.** Yes, it does.



BEFORE THE  
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DOCKET NO. 20200051-GU  
IN RE: PETITION FOR BASE RATE INCREASE BY  
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AND

DOCKET NO. 20200166-GU  
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DEPRECIATION STUDY BY PEOPLES GAS SYSTEM

REBUTTAL TESTIMONY AND EXHIBIT  
OF  
DANE A. WATSON  
ON BEHALF OF PEOPLES GAS SYSTEM

FILED: 09/21/2020



1 Q. Please explain how your rebuttal testimony is organized.

2

3 A. OPC witness Garrett has made recommendations for selected  
4 life and net salvage parameters which produce lower  
5 depreciation rates than those I recommend. First, I will  
6 discuss the issues with witness Garrett's life  
7 recommendations. Next, I will discuss his differing  
8 positions on net salvage parameters.

9

10 Q. Have you prepared an exhibit supporting your rebuttal  
11 testimony?

12

13 A. Yes, I have. My Exhibit No. \_\_ (DAW-2), consisting of six  
14 documents prepared by me or under my direction and  
15 supervision.

16 Document No. 1 Email response to discovery questions  
17 sent from OPC, dated September 9,  
18 2020.

19 Document No. 2 Comparison of Account 380 - Steel  
20 Services Observed Life Table using  
21 witness Garrett's non-existent 1970-  
22 2020 experience band compared to the  
23 actual longest experience band of  
24 1983-2018.

25 Document No. 3 RTU Detail for Accounts

1 Document No. 4 Account 378 - M&R Stations Sum of  
2 squared differences computations  
3 (correcting witness Garrett's  
4 calculations).

5 Document No. 5 Account 380 - Steel Services sum of  
6 squared differences computations  
7 (correcting witness Garrett's  
8 calculations).

9 Document No. 6 Account 385 - Industrial M&R Stations  
10 Sum of squared differences revised  
11 computations (correcting witness  
12 Garrett's calculations).

13

14 **Q.** Please summarize the key concerns and disagreements you  
15 have regarding the substance of witness Garrett's  
16 testimony.

17

18 **A.** My key concerns and disagreements are as follows:

19 1. The four life parameter changes recommended by OPC  
20 witness Garrett are inappropriate and based on  
21 flawed analysis.

22 2. The six-net salvage parameter changes recommended by  
23 OPC witness Garrett are arbitrary, not supported by  
24 Company experience and should be rejected.

25

1 **PROPOSED LIFE PARAMETERS**

2 **Q.** What recommendations does witness Garrett make with  
3 regard to various account service lives?

4  
5 **A.** Witness Garrett suggests that the proposed service lives  
6 for four distribution accounts should be extended.<sup>1</sup>

7  
8 **Q.** How does witness Garrett's proposed lives and survivor  
9 curves for the four accounts at issue compare with those  
10 currently approved for Peoples' and your proposals?

11  
12 **A.** Table 1 below compares my proposals to witness Garrett's  
13 proposals for the existing life and survivor parameters  
14 for the four accounts at issue.

15  
16 **TABLE 1**

17

				Company		OPC	
		Existing		Proposed		Proposed	
Acct		Life	Curve	Life	Curve	Life	Curve
378	M&R Station Equipment	31	R1	40	R1.5	46	R1
380	Services – Steel	50	R0.05	52	R0.5	57	R0.5
380	Services –Plastic	55	R1.5	55	R1.5	64	R1.5
385	Industrial M&R Station	32	R4	37	R3	41	R3

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24

<sup>1</sup> Witness Garrett's Direct Testimony, page 91.

1 Q. Do you agree with witness Garrett's recommendations?

2

3 A. No. Witness Garrett's proposed service lives for the  
4 four distribution mass property accounts are unreasonable  
5 and are not based on sound depreciation practices.  
6 Witness Garrett's recommendations should be rejected, and  
7 my proposed service lives should be adopted.

8

9 Q. Would you elaborate on your disagreement with witness  
10 Garrett's life selections?

11

12 A. Yes. There are a number of global and systematic errors  
13 in witness Garrett's analysis which lead to inappropriate  
14 life recommendations. I will address those in this  
15 section. Later, I will discuss account-specific issues  
16 with witness Garrett's four life recommendations.

17

18 Q. Would you describe the global errors in witness Garrett's  
19 analysis?

20

21 A. Yes. Witness Garrett's analysis:

- 22 • Used a non-existent experience band as his only band  
23 that included 12 or more years with no retirements.  
24 This skewed his analytical results and ultimately his  
25 recommendations.

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- Violated the principles behind actuarial analysis by only using one placement and experience band (the full band) thereby not analyzing trends in life through time.
- Discarded relevant data in analyzing his single band by using a novel (non-industry standard) approach that cut off and ignored Company-specific experience.
- Ignored both company-specific operational information and reasonable engineering expectations for the life of assets.

**ERRONEOUS EXPERIENCE BAND**

**Q.** What band(s) did witness Garrett use in his life analysis?

**A.** Based on witness Garrett's testimony, workpapers and response to a Data Request (See Exhibit DAW-1), his analyses solely used a single placement/experience band as shown below<sup>2</sup>:

---

<sup>2</sup> See witness Garrett's Exhibit 23 and my Exhibit No. \_\_\_ (DAW-1)

1 **Table 2: Garrett Band for Each Account**

2

Account	OPC Placement Band	OPC Experience Band
378	1940-2019	1970-2020
380 Steel	1910-2020	1970-2020
380 Plastic	1959-2020	1970-2020
385	1958-2019	1970-2020

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7

8 **Q.** Do these bands witness Garrett used match the underlying  
9 data he used?

10

11 **A.** No. Witness Garrett responded to a data request in  
12 Exhibit No. \_\_ (DAW-1) that he used the same data for his  
13 analysis as contained in the Company's Depreciation Study  
14 ("Study"). This admission points out the error in  
15 witness Garrett's band selections. The data for the  
16 Company's Study did not contain transactions back to 1970  
17 (which would be necessary for an experience band back to  
18 1970) and the data did not contain transactions from 2019  
19 or 2020 since the study date was at December 31, 2018.

20

21 **Q.** Would you expand on the issue with using an experience  
22 band starting in 1970?

23

24 **A.** Yes. Witness Garrett's life analysis experience bands of  
25 1970-2020 or 1970-2019 include periods where no Peoples'



1 history is available. The Company's available actuarial  
2 history begins in 1983, consistent with other  
3 depreciation studies the Company has presented before  
4 this Commission. Witness Garrett's inclusion of  
5 experience band periods where data does not exist  
6 (including 1970-1982 and 2019-2020) makes it appear  
7 (incorrectly) that the Company had no retirements of any  
8 kind during those periods. This created a flawed  
9 analysis that witness Garrett then used as the basis of  
10 his recommendations.

11  
12 **Q.** Has Peoples used historical data prior to 1983 in its  
13 previous Study?

14  
15 **A.** No. Consistent with the current Study, in Account 378,  
16 the Company retirement history is shown on pages 215-224  
17 of the 2016 Study ending in transaction year 1983. In  
18 Account 380-Steel Services, Company retirement history is  
19 shown on pages 296-309 of the 2016 Study ending in  
20 transaction year 1983. In Account 380 Plastic Services,  
21 the Company retirement history is shown on pages 333-340  
22 of the 2016 Study ending in transaction year 1986. In  
23 Account 385, the Company retirement history is shown on  
24 pages 504-511 of the 2016 Study ending in transaction year  
25 1985. Although in the past Study (and the current Study),

1           there is no historical experience available between 1970  
2           and 1982, witness Garrett still included that period in  
3           his analysis.

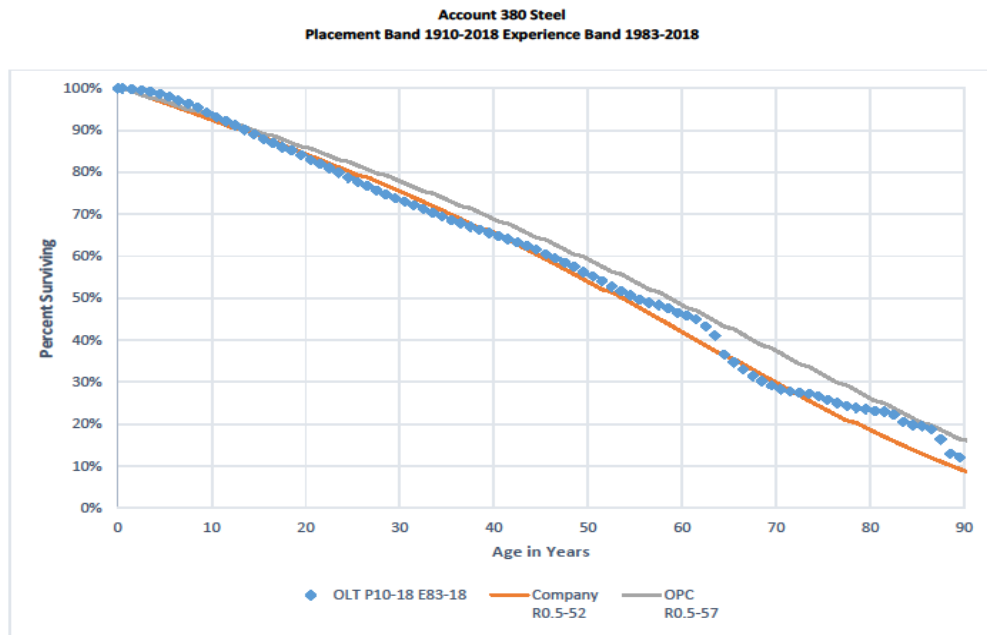
4  
5   **Q.**   Why does it matter if the experience band uses 1970-2018  
6           instead of the correct 1983-2018?

7  
8   **A.**   The use of the non-existent years creates different  
9           results in the observed life table if the experience band  
10          is the incorrect 1970-2018 as compared to the actual  
11          1983-2018 range. In some accounts, the difference can be  
12          large. For example, in Account 380 Steel Services, the  
13          wider experience band of 1970-2020 (of which the first 12  
14          years do not exist in reality) produced curve points as  
15          much as **7.15 percent** higher than the correct 1983-2018  
16          band. See my Exhibit No. \_\_ (DAW-2), Document No. 2, to  
17          show the computations for Account 380-Steel Services.  
18          This may not seem significant on the surface; it can  
19          erroneously move the life observed in the analysis by  
20          several years in the graphical analysis. Additionally,  
21          given witness Garrett's reliance on mathematical fitting,  
22          the life with the best least squares curve fit will also  
23          erroneously change if curve points related to Company  
24          experience are overstated by including the blank years.  
25          In the individual account discussions, I will show how

1 using the correct experience band can calculate  
2 statistical matches that are better under my  
3 recommendation than witness Garrett's.

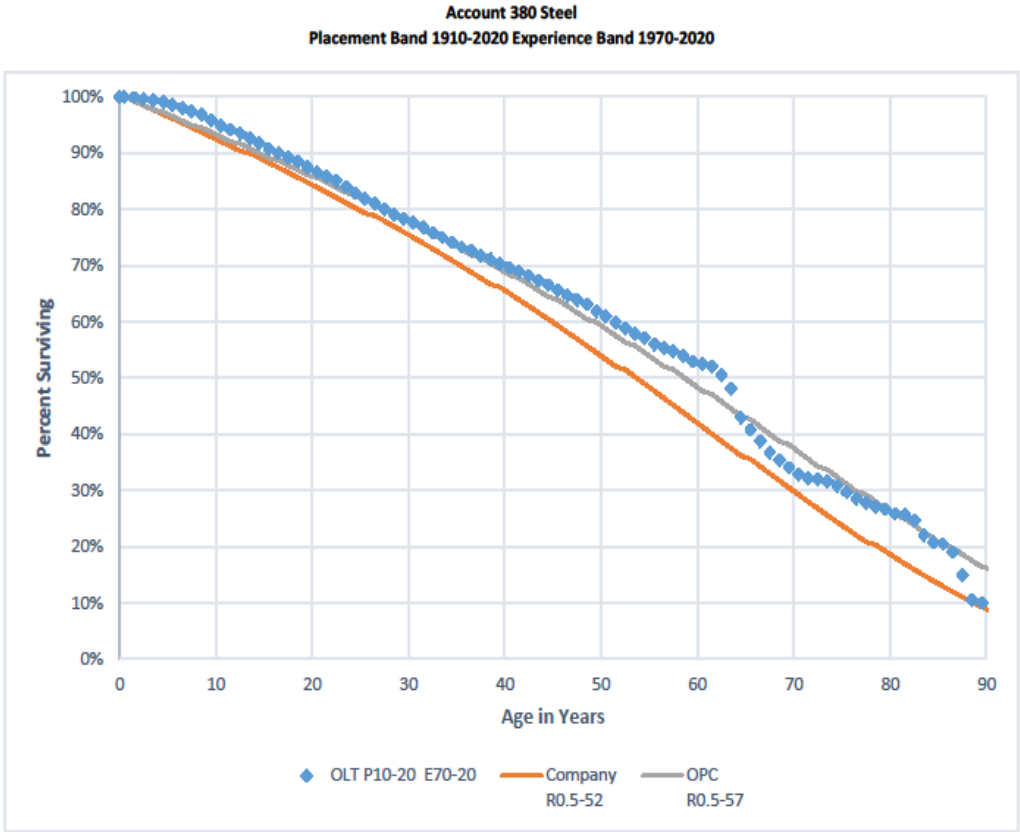
4  
5 **Q.** Would you demonstrate how using this erroneous experience  
6 band will skew the results of the graphical analysis?

7  
8 **A.** Yes. Below is my recommendation and witness Garrett's  
9 recommendation for Account 380-Steel Services using the  
10 correct experience band

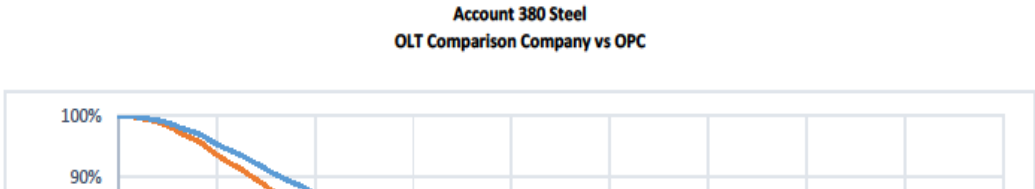


22 As seen, my recommendation is a much better match to the  
23 Company's actual experience. Next is a graph of the mine  
24 and witness Garrett's recommendations using his erroneous  
25 band.

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Using the erroneous band, witness Garrett's recommendation would appear to be a better match, however, it based on inaccurate calculations. Demonstrated another way, the graph below shows the observed life table data points using the correct calculation (i.e. the actual range of Company experience) and using witness Garrett's erroneous band.



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Simply using an erroneous experience band in his calculation skewed the data to incorrectly suggest a longer life than is experienced by the Company in reality. For this reason (if no other), witness Garrett's life recommendations should not be accepted.

**SINGLE BAND**

**Q.** What placement and experience bands did witness Garrett use in his analysis?

1 **A.** Witness Garrett only used one placement and experience  
2 band in his testimony and workpapers for each account, as  
3 summarized in Table 2.

4  
5 **Q.** Do you agree with witness Garrett's decision to use only  
6 one placement and experience band?

7  
8 **A.** No. The erroneous experience band was discussed above.  
9 witness Garrett's use of only one placement and  
10 experience band is an additional issue that does not  
11 follow sound depreciation practice or guidance, and in my  
12 expert opinion, does not lead to accurate results in this  
13 case. NARUC's *Public Utility Depreciation Practices*  
14 advocates the use of multiple bands:

15 Banding is compositing a number of years of  
16 data in order to merge them into a single data  
17 set for further analysis. Often, several bands  
18 are analyzed. By making determinations of the  
19 life and retirement dispersion in successive  
20 bands, the analyst can get a clear indication  
21 of whether there is a trend in either the life  
22 of the plant or in the dispersion of the  
23 retirements.<sup>3</sup>

24

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<sup>3</sup> NARUC, *Public Utility Depreciation Practices*, at 113 (1996).

1 Another learned treatise, *Depreciation Systems*, offers  
2 similar guidance:

3 The analyst must use good judgment when  
4 determining band widths. Many empirical  
5 procedures governing this choice have been  
6 developed. These include the selection bands  
7 of fixed width, often 3, 5, or 10 years;  
8 rolling bands, in which one band overlaps the  
9 next; and shrinking bands, in which the width  
10 of the band systematically decreases.

11 A preferred approach is to select the bands  
12 based on the history and the activities that  
13 occurred during the period defined by the  
14 bands. Because placement bands are often used  
15 to describe property of a particular  
16 technology, a band could be chosen that will be  
17 wide enough to include all property of a  
18 similar technology. Experience bands may be  
19 chosen to include the calendar years during  
20 which a single force of retirement was of  
21 particular interest.

22 Bands may be chosen to detect change in the  
23 survivor characteristics.<sup>4</sup>

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<sup>4</sup> F.K. Wolf and W. C. Fitch, *Depreciation Systems*, at 186 (1994).

1           Witness Garrett does not explain why he has decided not  
2           to follow this guidance and instead choose only one  
3           placement and experience band.

4  
5           **Q**    What placement and experience bands did you use for  
6           purposes of your Study?

7  
8           **A.**   I used five or more placement/experience bands for each  
9           account at issue in this proceeding. I ran an overall  
10          placement band with two experience bands: the overall  
11          experience band, 1983-2018, and 1999-2018 to isolate  
12          experience in those transaction years. I also ran the  
13          1969-2018 placement band with the 1983-2018 and 1999-2018  
14          experience bands. If sufficient data existed for life  
15          analysis, I also ran an overall band of 1999-2018.

16  
17          **CURVE TRUNCATION**

18          **Q.**    Do you agree with witness Garrett's proposal to remove  
19          certain portions of the OLTS for the purpose of making  
20          mathematical comparisons?

21  
22          **A.**    No.     By eliminating certain relevant data, witness  
23          Garrett seeks to match only the top segment of the curve.

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**TABLE 3**

<b>Account</b>	<b>OLT Matched by Garrett</b>
378	100% to 55.24% <sup>1</sup>
380 Steel Services	100% to 40.79% <sup>2</sup>
380 Plastic Services	100% to 84.16% <sup>3</sup>
385	100% to 68.12% <sup>4</sup>

<sup>1</sup> Exhibit DJG-19 page 1  
<sup>2</sup> Exhibit DJG-20, page 2  
<sup>3</sup> Exhibit DJD-21, page 1  
<sup>4</sup> Exhibit DJD-22, page 1

Particularly in the case of Account 380 Plastic Services, witness Garrett disregards significant portions of the OLT curve completely. His mathematical fitting criteria truncates the curve at age 37.5 with 84 percent surviving as he computes the OLT in Exhibit DJD-21, page 1. While I agree, less weight should be given to points at the bottom of the curve compared to other points along the curve, this data should not be completely excluded from the analysis. *Depreciation Systems* provides authoritative guidance as to what part of the curve to match:

After plotting the observed curve, the analyst should first visually match the plotted data to make an initial judgment about the type curve that may be good fits. The analyst also must decide which points or section of the curve

1 should be given the most weight. Points at the  
2 end of the curve are often based on fewer  
3 exposures and may be given less weight than the  
4 points based on larger samples. The weight  
5 placed on those points will depend on the size  
6 of the exposures. Often the middle section of  
7 the curve (that section ranging from  
8 approximately 80 percent to 20 percent  
9 surviving) is given more weight than the first  
10 and last sections. This middle section is  
11 relatively straight and is the portion of the  
12 curve that often best characterizes the survivor  
13 curve.<sup>5</sup>

14  
15 Witness Garrett has provided no authority in support of  
16 his position to disregard entire segments of the observed  
17 life table curves. By ignoring results from the 80 to 20  
18 percent surviving period, his methodology runs counter to  
19 academic guidance.

20  
21 **SUBJECT MATTER EXPERTS**

22 **Q.** You state earlier that witness Garrett did not  
23 incorporate information from SMEs in his recommendations.

---

<sup>5</sup> F.K. Wolf and W. C. Fitch, *Depreciation Systems*, at 46-47 (1994) (emphasis added).

1           Why do you take issue with this?  
2

3       **A.**   Witness Garrett makes no indication in his testimony,  
4           exhibits, or workpapers that he reviewed or incorporated  
5           any information from Company experts in his life  
6           recommendations. Information provided by SME's on the  
7           specific plant and equipment being studied is of critical  
8           importance in the depreciation study process. In its  
9           1996 edition of the publication *Public Utility*  
10          *Depreciation Practices*, NARUC advises against strict  
11          reliance on historical data and fitting, stating:

12                Depreciation analysts should avoid becoming  
13                ensnared in the historical life study and  
14                relying solely on mathematical solutions. The  
15                reason for making an historic life analysis is  
16                to develop a sufficient understanding of  
17                history in order to evaluate whether it is a  
18                reasonable predictor of the future. The  
19                importance of being aware of circumstances  
20                having direct bearing on the reason for making  
21                an historical life analysis cannot be  
22                understated. The analyst should become  
23                familiar with the physical plant under study  
24                and its operating environment, including

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talking with the field people who use the equipment being studied.<sup>6</sup>

For instance, witness Garrett ignores important information for Account 385-Industrial and Measuring Equipment. My interview notes state, that

"Meters for these stations are in the meter account. This consists of all other assets serving the customer. They would be more parallel to a DRS than to a city gate. The environment where the industrial M&R stations are set is harsher than most DRS and they would have a slightly shorter life than the DRS."

Witness Garrett's recommendation of 41 years ignores this crucial information.

**REASONABLENESS TEST**

**Q.** You stated above that witness Garrett did not consider the life characteristics that would be normal or expected for similar assets found across North America. Why is this problematic?

---

<sup>6</sup> NARUC, *Public Utility Depreciation Practices*, at 126 (1996) (emphasis added).

1     **A.**    The lives witness Garrett selected for the four accounts  
2            at issue are beyond what would reasonably be expected for  
3            the mix and types of assets within these accounts.  
4            Witness Garrett fails to take into account the shorter  
5            life expectations for individual retirement units  
6            (assets) within each account as compared to his  
7            recommendations.    A summary of retirement units by  
8            account is presented in Exhibit No. \_\_ (DAW-2), Document  
9            No. 3.    If the majority of the dollars in a particular  
10           account are associated with assets that have projected  
11           lives between 20 and 40 years, an overall life for the  
12           account of 60 years for that account will not be  
13           reasonable.    This is true even if mathematical curve  
14           matching on historical data for that account over the  
15           last 80 years mechanically produces a 60 year overall  
16           life.    Simply recommending the output of a statistical  
17           model without validating against operational realities or  
18           reasonable norms is not an accurate way to set asset  
19           lives.

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**ACCOUNT LEVEL DISCUSSION**

**Account 378 - Measuring and Regulating Equipment**

**Q.**    Please describe you and witness Garrett's recommendations  
          for Account 378- Measuring and Regulating Equipment?

1     **A.**    I recommend increasing the existing service life for  
2            Account 378, which is currently 31 R1, to a 40 R1.5.  
3            This represents an increase of nine years.    Witness  
4            Garrett proposes 46 R1, which is an increase of 15 years  
5            over the existing and six years beyond my recommendation.  
6            At December 31, 2018, the average age of survivors in  
7            this account is 9.07 years and the average age of  
8            retirements in this account is 20.70 years.    This  
9            information demonstrates that this is a young account  
10           with little retirement experience for the majority of the  
11           assets.

12  
13     **Q.**    Do you agree with witness Garrett's basis for proposing a  
14            46 R1 Curve?

15  
16     **A.**    No.    There are a number of reasons I disagree with  
17            witness Garrett on the life for this account.    First,  
18            witness Garrett does not appear to factor in the life  
19            expectations for specific assets in this account as  
20            communicated by Company SMEs.    My interview notes on this  
21            account indicate the following factors that influence the  
22            life of this account:

23                    "They would expect a shorter life for DRS  
24                    than for City Gates.    They are more likely  
25                    to be relocated and changed due to capacity

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needs, and road improvement needs than the gates. The existing 31 years seems short operationally. DRS are on the side of the road in many cases. They are in the process of reviewing all of the DRS and will be replacing many of the DRS over the next few years. There were a number that were retired when moving away from low pressure areas.”<sup>7</sup>

Second, witness Garrett’s life analysis is flawed as discussed in an earlier section. Thus, his life analysis graphs are flawed as well.

Third, as also discussed earlier, witness Garrett only examines one band for his proposal. In contrast, I used five different placement and experience bands as shown in my workpapers. As stated in NARUC’s *Public Utility Depreciation Practices*, it is important to look at different placement bands and experience bands:

“Placement bands may be used to show the effects and technological and material changes, whereas experience bands are used the show the effects of business and

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<sup>7</sup> Watson Direct Workpapers, Interview Notes.

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operational changes. Such banding is necessary because the analyst does not have access to a database wherein each factor (e.g., change in materials/technology or operational environment) is held constant.”<sup>8</sup>

**Q.** What does a visual comparison over multiple bands show when correcting the previously discussed errors in witness Garrett’s analysis?

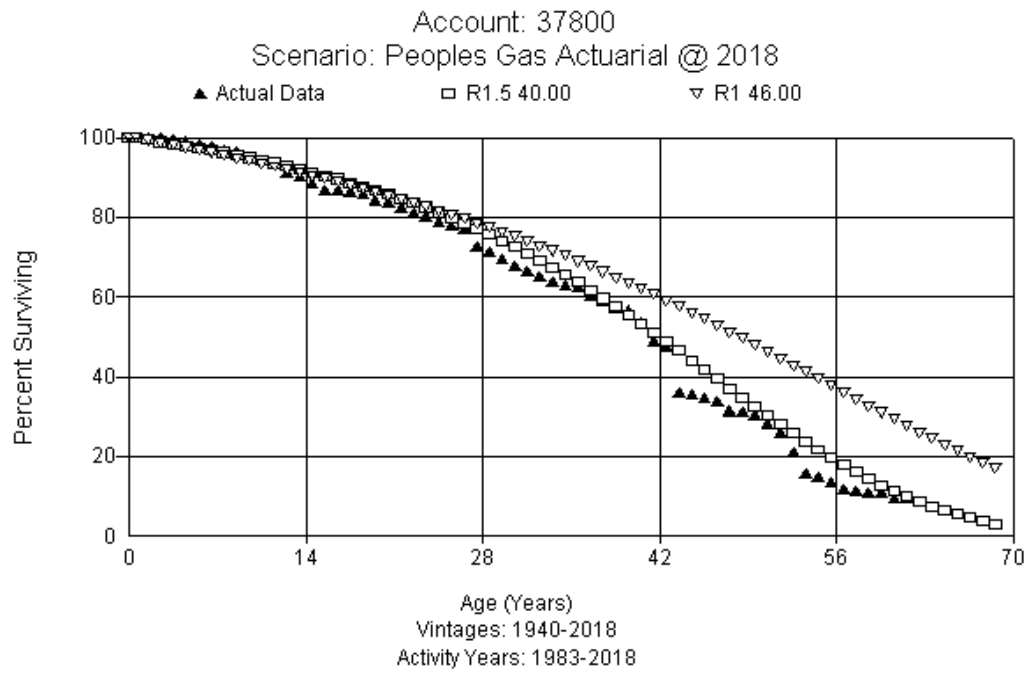
**A.** Below are graphs over various placement and experience bands. The dark triangles represent the observed life table, the rectangles represent the Company’s proposal, and the slanted triangles show witness Garrett’s proposal. The first graph shows the period 1940–2018 for the placement and correct 1983–2018 experience band with both my recommendation and that of witness Garrett. My recommendation is clearly a better match.

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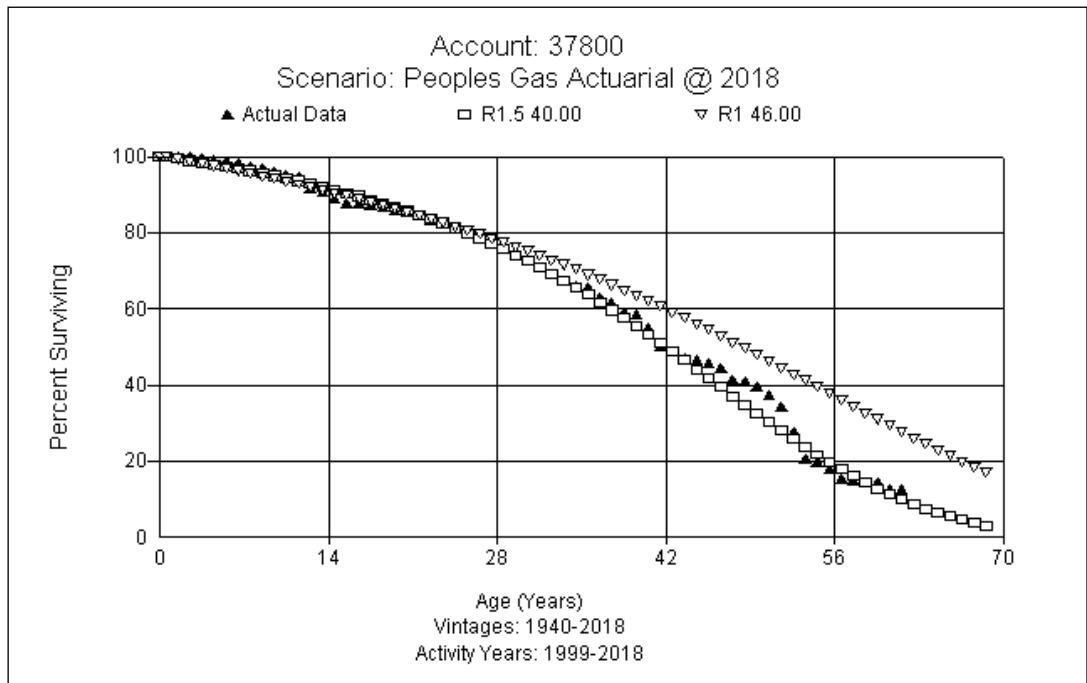
<sup>8</sup> NARUC, *Public Utility Depreciation Practices*, at 125 (1996).



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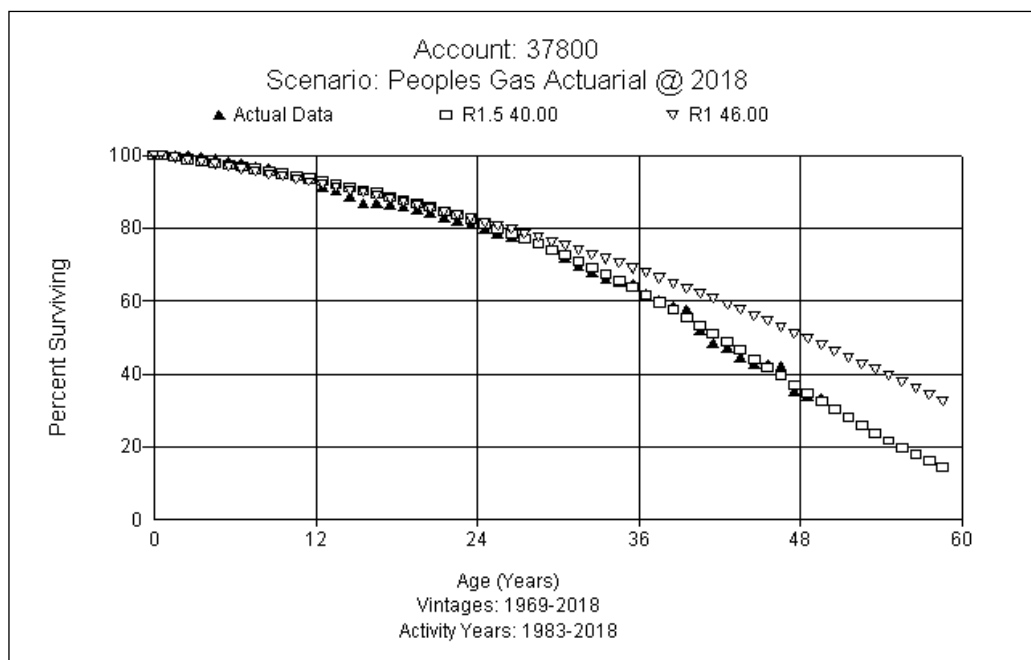


A narrower experience band of 1999-2018 with the same placement year 1940-2018 again shows the Company's proposal is a better visual match.

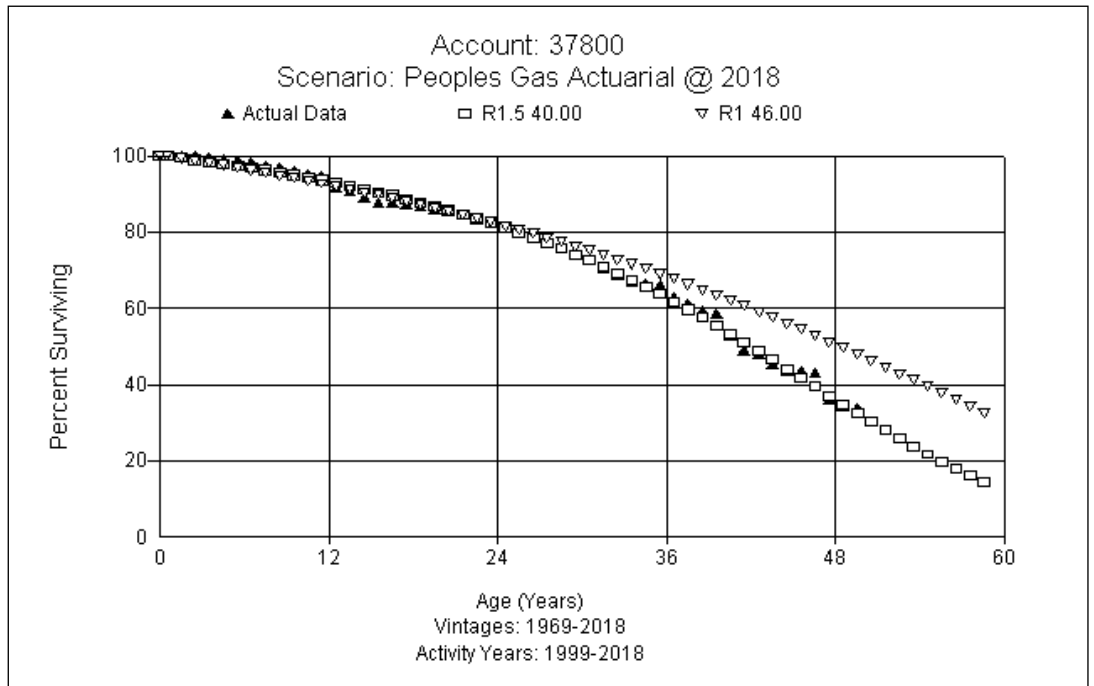


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A change in the placement band to 1969-2018 with the experience band of 1983-2018 again shows the Company's proposal is a better visual match.



A change in the placement band to 1969-2018 with the experience band of 1999-2018 again shows the Company's proposal is a better visual match.



By selecting only one band (and having the errors discussed earlier), witness Garrett's analysis doesn't fully analyze or accurately represent the Company's historical experience.

**Q.** Are there other aspects that you considered in your 40 R1.5 recommendation?

**A.** Yes. The fit I selected was one of 21 different fits across multiple placement and experience bands, which can be found in my workpapers. There are a variety of assets with a mix of lives recorded in this account and my movement to a 40-year life is reasonable. Further, witness Garrett's data is flawed.

1 Q. Do you have any additional comments on the life  
2 recommendation for this account?

3

4 A. Yes. My life recommendation of 40-R1.5 recognizes both  
5 the indications in the life analysis and the Company-  
6 specific information from the SMEs. Further, my analysis  
7 recommends an *increase* of 9 years over the existing life,  
8 which translates to a 29 percent increase to the life.  
9 To move the life another six years from my recommendation  
10 is excessive. When compared to existing parameters,  
11 witness Garrett's life represents an increase of 15 years  
12 or a 48 percent change. This level of change without  
13 operational reasons at one time is unreasonable, is not  
14 supported by the evidence, and should be rejected.

15

16 Q. How do witness Garrett's mathematical fitting criteria  
17 appear using the historical data using the appropriate  
18 bands?

19

20 A. When using the 1940-2018 placement band and 1983-2018  
21 experience band, the overall sum of squares difference of  
22 my recommendation is 0.1260 versus witness Garrett's of  
23 0.9109. It should be noted that the smaller the number,  
24 the closer the match. Using witness Garrett's proposed 1  
25 percent exposure criteria, the sum of squares difference

1 is 0.0565 and 0.1879 between the Company's proposal and  
2 OPC's, respectively. See Exhibit (DAW-2), Document No.  
3 4. Using Company history and the correct placement and  
4 experience band, the Company's proposal is the superior  
5 proposal for visual fitting as well as mathematical  
6 fitting.

7

8 **Q.** What life did witness Garrett recommend for this account  
9 in the recent Florida City Gas case?

10

11 **A.** In Docket 20170179-GU for Florida City Gas, witness  
12 Garrett recommended a 30 S3<sup>9</sup> life for this account. It  
13 does not seem logical that Peoples would have assets in  
14 this account that last 53.3 percent<sup>10</sup> longer than witness  
15 Garrett's recommendation for another Florida utility.

16

17 **Account 380 - Services Steel**

18 **Q.** Please describe your and witness Garrett's  
19 recommendations for Account 380- Services Steel?

20

21 **A.** I recommend increasing the existing service life for  
22 Account 380, Services Steel, which is currently 50 R0.5,  
23 to a 52 R0.5. This represents an increase of 2 years.

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<sup>9</sup> Docket 20170179-GU, Exhibit DJG-20 and 21.

<sup>10</sup>  $(46 - 30) / 30 = 53.3$  percent

1 witness Garrett proposes 57 R0.5, which is an increase of  
2 seven years over the existing and five years beyond my  
3 recommendation. At December 31, 2018, the average age of  
4 survivors in this account is 23.14 years and the average  
5 age of retirements in this account is 26.29 years. This  
6 information demonstrates the account is more mature with  
7 assets that are replaced on an ongoing basis.

8  
9 **Q.** Do you agree with witness Garrett's basis for proposing a  
10 57 R0.5 Curve?

11  
12 **A.** No. There are a number of reasons I disagree with  
13 witness Garrett on the life for this account. First,  
14 witness Garrett does not appear to factor in the life  
15 expectations for specific assets in this account as  
16 communicated by Company SMEs. My interview notes on this  
17 account indicate the following factors that influence the  
18 life of this account:

19 Forces of retirements are corrosion, dig-  
20 ins, and relocations. Other factors  
21 influencing the life of this account are the  
22 Company's policy to replace steel services  
23 with plastic if a main changes from steel to  
24 plastic.<sup>11</sup>

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<sup>11</sup> Watson Exhibit No. \_\_ (DAW-1), Page 87.

1 Second and third, as discussed earlier, witness Garrett's  
2 life analysis is flawed and he only examines one band for  
3 his proposal. In contrast, I used seven different  
4 placement experience bands as shown in my workpapers. As  
5 stated earlier, NARUC's *Public Utility Depreciation*  
6 *Practices* notes that it is important to look at different  
7 placement bands and experience bands: "Placement bands  
8 may be used to show the effects and technological and  
9 material changes, whereas experience bands are used to  
10 show the effects of business and operational changes.  
11 Such banding is necessary because the analyst does not  
12 have access to a database wherein each factor (e.g.,  
13 change in materials/technology or operational  
14 environment) is held constant."<sup>12</sup>

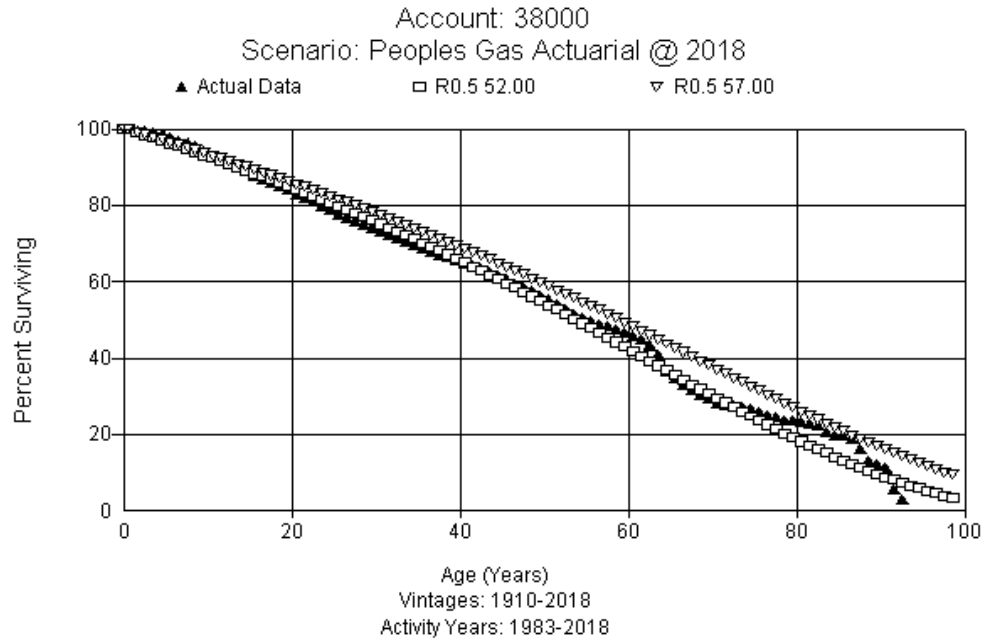
15  
16 **Q.** What does a visual comparison over multiple bands show?

17  
18 **A.** Below are graphs over various placement and experience  
19 bands. The dark triangles represent the observed life  
20 table, the rectangles represent the Company's proposal,  
21 and the slanted triangles show witness Garrett's  
22 proposal. The graph below shows our competing selections  
23 for the period 1910-2018 for the placement band and 1983-

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<sup>12</sup> NARUC, *Public Utility Depreciation Practices*, at 125 (1996).

1 2018 experience band. My recommendation is clearly a  
2 superior match.



**Q.** Are there other aspects that you considered in your 52 R0.5 recommendation?

**A.** Yes. The fit I selected was one of 25 different fits across multiple placement and experience bands, which can be found in my workpapers. There are a variety of assets with a mix of lives recorded in this account and my movement to a 52-year life is reasonable.

**Q.** Do you have any additional comments on the life recommendation for this account?



1     **A.**    Yes.    My life recommendation of 52-R0.5 recognizes both  
2            the indications in the life analysis and the Company-  
3            specific information from the SMEs.  Further, my analysis  
4            recommends an *increase* of two years over the existing  
5            life, which translates to a 4 percent increase to the  
6            life.  To move the life another five years from my  
7            recommendation is excessive.  When compared to existing  
8            parameters, witness Garrett's life represents an increase  
9            of seven years or a 14 percent change.  This level of  
10           change without operational reasons at one time is  
11           unreasonable, is not supported by the evidence, and  
12           should be rejected.

13  
14     **Q.**    How do witness Garrett's mathematical fitting criteria  
15            appear using the historical data through 2018?

16  
17     **A.**    Yes.    When using the 1910-2018 placement band and the  
18            correct 1983-2018 experience band, the overall sum of  
19            squares difference of my recommendation is 0.0643 versus  
20            witness Garrett's of 0.1644.  Again, the smaller the  
21            number, the closer the match.  Using witness Garrett's  
22            proposed 1 percent exposure criteria, the sum of squares  
23            difference is 0.0239 and 0.0992 between the Company's  
24            proposal and witness Garrett's, respectively.  See  
25            Exhibit No. \_\_\_ (DAW-2), Document No. 5.  Using Company

1 history and the correct placement and experience band,  
2 the Company's proposal is the superior proposal for  
3 visual fitting as well as mathematical fitting.  
4

5 **Q.** What life did witness Garrett recommend for this account  
6 in the recent Florida City Gas case?  
7

8 **A.** In Docket 20170179-GU for Florida City Gas, witness  
9 Garrett recommended a 45 S6<sup>13</sup> life for this account. It  
10 does not seem logical that Peoples would have assets in  
11 this account that last 26.7 percent<sup>14</sup> longer than witness  
12 Garrett's recommendation for another Florida utility.  
13

14 **Account 380 - Plastic Services**

15 **Q.** Please describe your and witness Garrett's recommendations  
16 for Account 380-Plastic Services?  
17

18 **A.** I recommend retaining the existing service life for  
19 Account 380-Plastic Services, which is currently 55 R1.5.  
20 Witness Garrett proposes 64 R1.5, which is an increase of  
21 nine years over the existing and my recommendation. In  
22 Peoples' last Study filed in Docket No. 20160159-GU,  
23 witness Garrett proposed 55 R.15 and only five years  
24 later his recommendation has changed significantly. At

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<sup>13</sup> Docket 20170179-GU, Exhibit DJG-20 and 21.

<sup>14</sup>  $(57 - 45) / 45 = 26.7$  percent

1 December 31, 2018, the average age of survivors in this  
2 account is 11.74 years and the average age of retirements  
3 in this account is 16.28 years. This information  
4 demonstrates that this is a young account with little  
5 retirement experience for the majority of the assets.

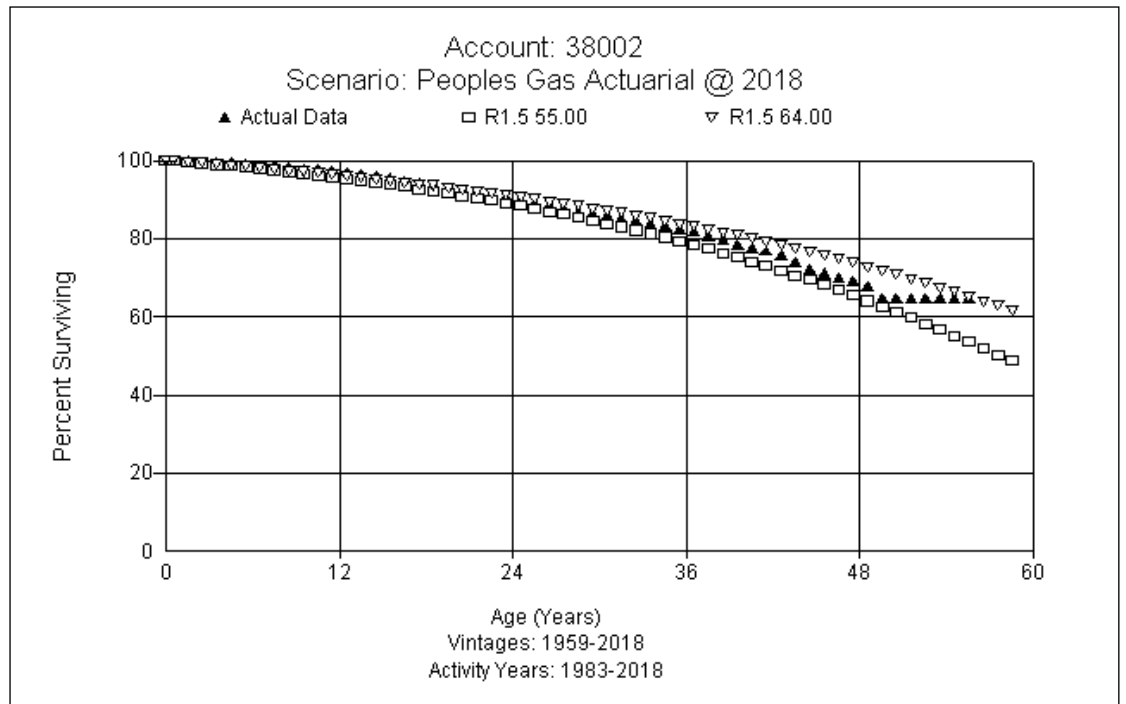
6  
7 **Q.** Do you agree with witness Garrett's basis for proposing a  
8 64 R1.5 Curve?

9  
10 **A.** No. There are a number of reasons I disagree with  
11 witness Garrett on the life for this account. First, as  
12 discussed earlier, witness Garrett's life analysis is  
13 flawed. Second, as discussed earlier and as with his  
14 other accounts, witness Garrett only examines one band  
15 for his proposal. In contrast, I used eight different  
16 placement experience bands as shown in my workpapers.  
17 Third, the use of witness Garrett's 1 percent of exposure  
18 criteria models only 100 percent to 84 percent, losing  
19 valuable data in his proposed truncation.

20  
21 **Q.** What does a visual comparison over multiple bands show?

22  
23 **A.** Below are graphs over various placement and experience  
24 bands. The dark triangles represent the observed life  
25 table, the rectangles represent the Company's proposal,

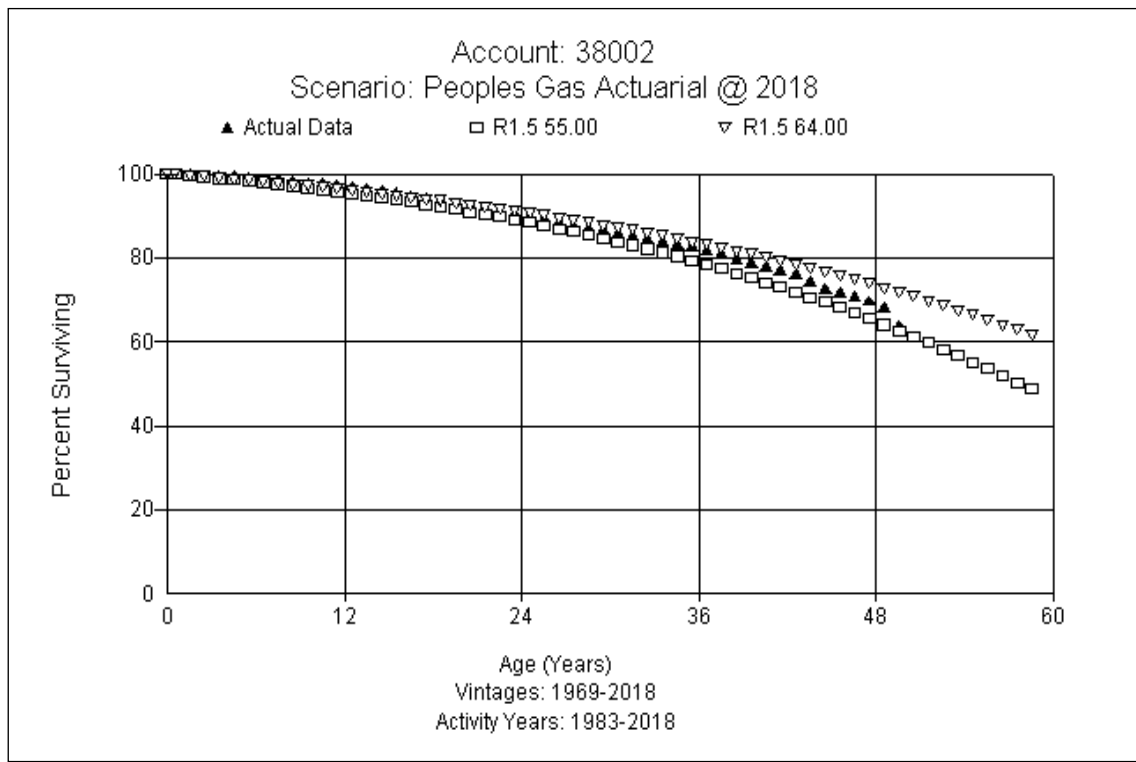
1 and the slanted triangles show witness Garrett's  
2 proposal. The first graph shows Peoples' competing  
3 recommendations over the period 1959-2018 for the  
4 placement band and the correct 1983-2018 experience band.  
5 As with other accounts, my recommendation is a better  
6 match to the Company's actual experience.



18

19 A different placement and experience band of 1959 -2000  
20 and 1999-2019 again shows the Company's proposal is still  
21 a better curve match than witness Garrett's proposal.

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**Q.** Are there other aspects that you considered in your 55 R1.5 recommendation?

**A.** Yes. The fit I selected was one of 37 different fits across multiple placement and experience bands, which can be found in my workpapers. There are a variety of assets with a mix of lives recorded in this account and my retention a 55-year life is reasonable.

**Q.** Do you have any additional comments on the life recommendation for this account?

1 **A.** Yes. My life recommendation of 55 R1.5 recognizes both  
2 the indications in the life analysis and the Company-  
3 specific information from the SMEs. Further, my analysis  
4 recommends no change over the existing life. To move the  
5 life another nine years from my recommendation is  
6 excessive. When compared to existing parameters, witness  
7 Garrett's life represents an increase of nine years or a  
8 14 percent change. This level of change without  
9 operational reasons at one time is unreasonable, is not  
10 supported by the evidence, and should be rejected.

11  
12 **Q.** What life did witness Garrett recommend for this account  
13 in the recent Florida City Gas case?

14  
15 **A.** In Docket 20170179-GU for Florida City Gas, witness  
16 Garrett recommended a 54 R2.5<sup>15</sup> life for this account. It  
17 does not seem logical that Peoples would have assets in  
18 this account that last 18.5 percent<sup>16</sup> longer than witness  
19 Garrett's recommendation for another Florida utility.

20  
21 **Account 385 - Measuring and Industrial Regulating Stations**

22 **Q.** Please describe your and witness Garrett's recommendations  
23 for Account 385-Measuring and Industrial Regulating

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<sup>15</sup> Docket 20170179-GU, Exhibit DJG-20 and 21.

<sup>16</sup>  $(64 - 54) / 54 = 18.52$  percent

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Stations?

**A.** I recommend increasing the existing service life for Account 385, which is currently 32 R4, to a 37 R3. This represents an increase of five years. Witness Garrett proposes 41 R3, which is an increase of nine years over the existing and four years beyond my recommendation. At December 31, 2018, the average age of survivors in this account is 21.35 years and the average age of retirements in this account is 21.89 years. This information demonstrates that this is an account with older assets and retirements that retirement age similar to the asset of the asset.

**Q.** Do you agree with witness Garrett's basis for proposing a 41 R3 Curve?

**A.** No. There are a number of reasons I disagree with witness Garrett on the life for this account. First, witness Garrett does not appear to factor in the life expectations for specific assets in this account as communicated by Company SMEs. As stated in Exhibit No. \_\_\_ (DAW-1), page 58-59 of my direct testimony, I mention factors that influence the life of this account:

Company personnel stated that meters for

1           these stations are booked in the meter  
2           account, and that the assets in this account  
3           include all other assets needed to serve the  
4           customer Company personnel believe that the  
5           assets in this account are more similar to a  
6           distribution regulator station in account  
7           37800 than a city gate station in account  
8           37900. Operationally Company personnel state  
9           that the operating environment in this  
10          account is harsher than most assets in a  
11          district regulator station. Consequently,  
12          from an operational perspective, Company  
13          personnel anticipate that the life of this  
14          account would be shorter than the life of  
15          Account 37800.

16  
17          Second, as, with other accounts, witness Garrett only  
18          examines one band for his proposal. In contrast, I used  
19          seven different placement and experience bands as shown  
20          in my workpapers.

21  
22          Third, the use of an incorrect experience band distorts  
23          the observed life table results.

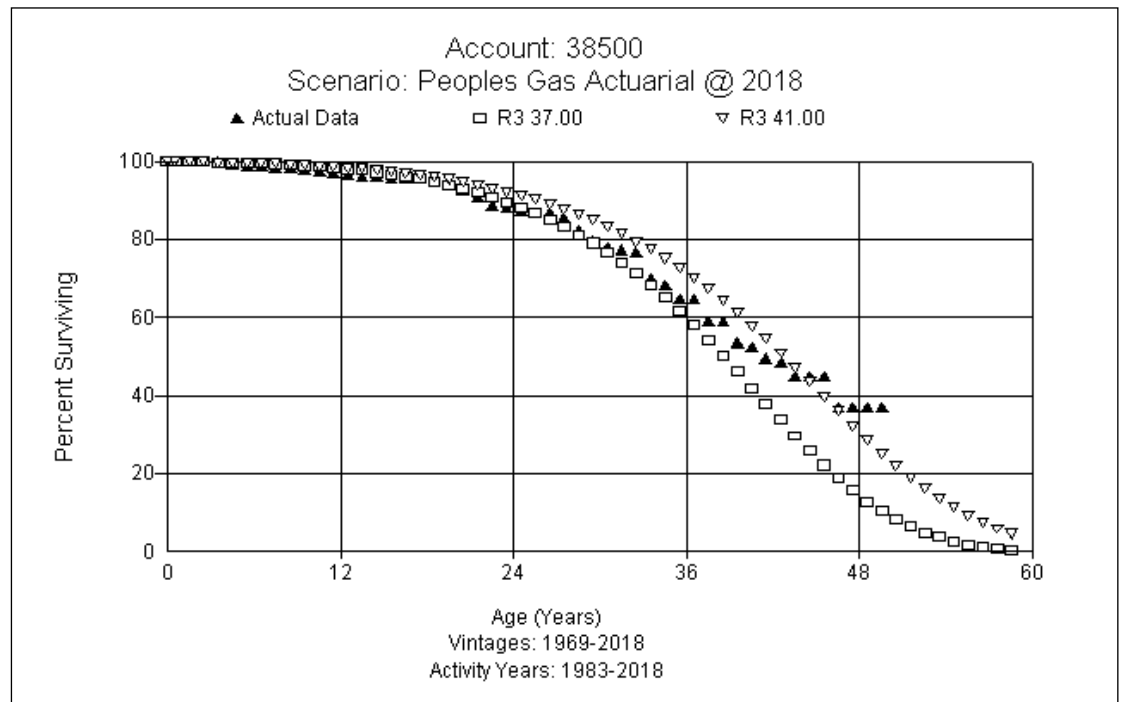
24  
25          Finally, the use Company history as shown below validates



1 the superiority of the Company's proposal compared to  
2 witness Garrett's.

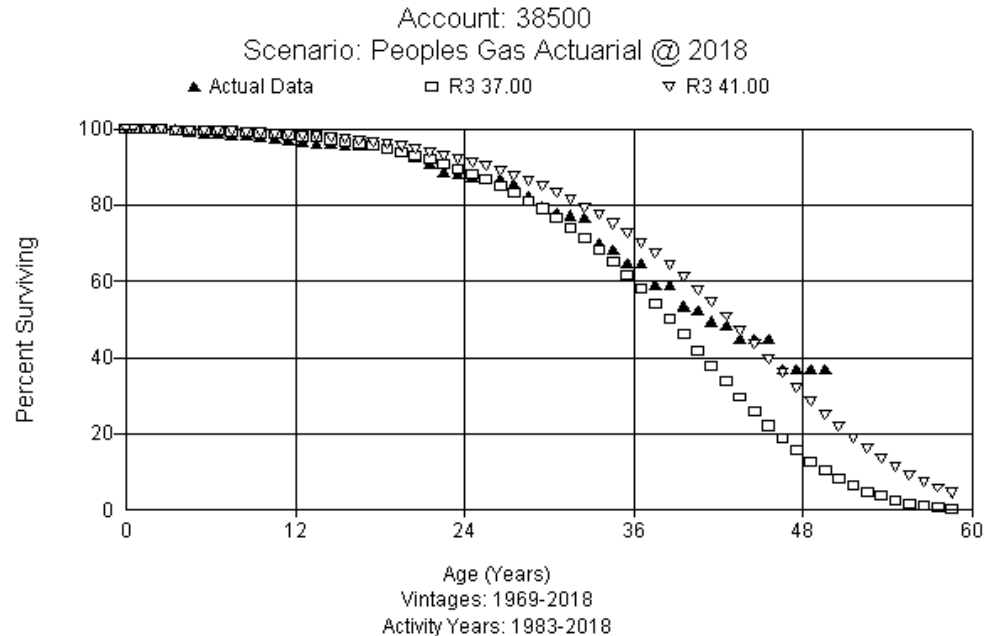
3  
4 **Q.** What does a visual comparison over multiple bands show?

5  
6 **A.** Below are graphs over various placement and experience  
7 bands. The dark triangles represent the observed life  
8 table, the rectangles represent the Company's proposal,  
9 and the slanted triangles show witness Garrett's  
10 proposal. The first graph shows the period 1958-2018 for  
11 the placement band and 1983-2018 experience band.



24 Clearly the Company's proposed 37 R3 is a better visual  
25 choice over all points.

1 A shorter placement band of 1969-2018 and experience band  
2 of 1983-2018 below also again affirms the Company's  
3 proposal is a better fit of the activity in this account.



15 **Q.** Are there other aspects that you considered in your 37 R3  
16 recommendation?

17

18 **A.** Yes. The fit I selected was one of 26 different fits  
19 across multiple placement and experience bands, which can  
20 be found in my workpapers. There are a variety of assets  
21 with a mix of lives recorded in this account and my  
22 movement to a 37-year life is reasonable.

23

24 **Q.** Do you have any additional comments on the life  
25 recommendation for this account?

1     **A.**    Yes.  My life recommendation of 37 R3 recognizes both the  
2            indications in the life analysis and the Company-specific  
3            information from the SMEs.  Further, my analysis  
4            recommends an *increase* of five years over the existing  
5            life, which translates to a 16 percent increase to the  
6            life.  To move the life another seven years from my  
7            recommendation is excessive.  When compared to existing  
8            parameters, witness Garrett's life represents an increase  
9            of 9 years or a 28 percent change.  This level of change  
10           without operational reasons at one time is unreasonable,  
11           is not supported by the evidence, and should be rejected.

12  
13     **Q.**    How does witness Garrett's mathematical fitting criteria  
14            appear using the historical data through 2018?

15  
16     **A.**    Yes.  When using the 1958-2018 placement band and a  
17            correct 1983-2018 experience band, the overall sum of  
18            squares difference is a closer 0.0416 for my  
19            recommendation than the 0.4313 for witness Garrett's.  
20            Using witness Garrett's proposed 1 percent exposure  
21            criteria, the sum of squares difference is 0.0100 and  
22            .0606 between the Company's proposal and witness  
23            Garrett's as well.  See my Exhibit No. (DAW-2), Document  
24            No. 6.  Using Company history and the correct placement  
25            and experience band, the Company's proposal is the

1 superior proposal for visual fitting as well as  
2 mathematical fitting.

3

4 **Q.** What life did witness Garrett recommend for this account  
5 in the recent Florida City Gas case?

6

7 **A.** In Docket 20170179-GU for Florida City Gas, witness  
8 Garrett recommended a 37 R2<sup>17</sup> life for this account. It  
9 does not seem logical that Peoples would have assets in  
10 this account that last 10 percent longer than witness  
11 Garrett's recommendation for another Florida utility.

12

13 **NET SALVAGE**

14 **Q.** What accounts are being challenged by witness Garrett?

15

16 **A.** Witness Garrett has recommended changes in life for six  
17 accounts in the distribution function.<sup>18</sup> Table 4 shown  
18 below is a summary of the plant accounts: the Company's  
19 existing and proposed net salvage percentages and OPC's  
20 proposed net salvage percentages.

21

22

23

24

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<sup>17</sup> Docket 20170179-GU, Exhibit DJG-20 and 21.

<sup>18</sup> Direct Testimony of David J. Garrett, page 102.

1 **Table 4 - Summary by Proposed-Life Parameters by Account**

2

3

4

5

<u>Acct</u>		<u>Company</u>		
		<u>Approved</u>	<u>Proposed</u>	<u>OPC</u>
		<u>Net Salvage</u>	<u>Net Salvage</u>	<u>Net Salvage</u>
		<u>percent</u>	<u>percent</u>	<u>percent</u>
6	376 Mains Steel	-40	-60	-50
7	376 Mains Plastic	-25	-40	-33
8	380 Services Steel	-100	-150	-125
9	380 Services Plastic	-55	-80	-68
10	382 Meter Install	-20	-30	-25
11	384 House Regulator Install	-20	-30	-25

12

13 **Q.** What is the basic premise of witness Garrett's opposition  
 14 to your net salvage recommendations?

15

16 **A.** Witness Garrett and I agree on the analysis methods and I  
 17 believe that witness Garrett has acknowledged the  
 18 significant cost of removal being incurred by Peoples,  
 19 which has resulted in much more negative net salvage when  
 20 comparing to the existing net salvage percentages.  
 21 However, witness Garrett's opposition is based on his  
 22 belief that the magnitude of the net salvage changes too  
 23 substantial.<sup>19</sup> Witness Garrett does not mention that  
 24 Peoples has not made changes to its net salvage

---

<sup>19</sup> Direct Testimony of David J. Garrett, 101: 15-17.

1 parameters for these almost all of these six accounts  
2 since Florida Docket 20110232, nearly 10 years ago. The  
3 Company's last depreciation study in 2016 retained the  
4 existing net salvage parameters for those accounts.<sup>20</sup>.  
5 Hence, the changes in net salvage rates are needed to  
6 align capital recovery for People's assets. Another  
7 factor witness Garrett fails to consider is that the goal  
8 of setting depreciation rates is to recover remaining  
9 investment and future removal cost over the remaining  
10 life of the assets. The trends toward higher negative  
11 net salvage need to be reflected in the Company's  
12 proposed rates so as not to create intergenerational  
13 inequities. Also, my net salvage proposals for numerous  
14 Peoples' accounts are still moderated when compared to  
15 actual experience.

16  
17 **Q.** Do you have any other comments on witness Garrett's  
18 overall net salvage approach before discussing the  
19 individual accounts at issue?

20  
21 **A.** Yes. Witness Garrett's proposal for net salvage for all  
22 six of the accounts is to arbitrarily halve the increase  
23 I recommend. He does not provide any other metrics or

---

<sup>20</sup> In the Company's last case in Docket 201600159-GU, witness Garrett's proposal and the settlement agreement adopted based on his recommendations which left net salvage parameters at existing levels with the exception of Account 376-Steel Mains.

1 analysis to show how his proposals compare to Peoples'  
2 actual experience. In the following sections I will  
3 provide a brief summary of the account net salvage and  
4 present some tables and graphs that will provide  
5 explanation and detail to support Peoples' proposals for  
6 the accounts in which witness Garrett and I disagree.  
7

8 **Q.** What factors are causing removal costs to increase?  
9

10 **A.** Many factors are causing an increase in removal cost for  
11 distribution plant including: the increase in labor cost  
12 due to the longer lives of assets, changes in safety and  
13 environmental requirements, requirements of working in  
14 urban areas, and overall contract labor cost increases.<sup>21</sup>  
15 All these factors are inextricably bound causing an  
16 increase in removal cost for each of the accounts  
17 discussed above. From this perspective, it is not  
18 remarkable that the cost to remove from service (and  
19 properly dispose of, when appropriate) steel mains and  
20 services, plastic mains and services, meter installations  
21 and house regulator installations and other assets are  
22 increasing.  
23

---

<sup>21</sup> Direct Testimony Dane A. Watson, Exhibit No. \_\_ (DAW-1), page 65-67.

1 Q. How have actual removal costs changed for these accounts  
2 over time?

3

4 A. The tables and graphs for each of the accounts discussed  
5 above provide clear evidence that over time, the Company  
6 is experiencing increasingly negative net salvage (caused  
7 by increasing removal cost) while the approved net  
8 salvage rate has not changed in a number of years.  
9 Clearly, the level of negative net salvage and increasing  
10 removal cost differs from the currently approved levels  
11 and while numerous Peoples' proposed net salvage  
12 percentages are a significant increase in negative net  
13 salvage, it is warranted and should be approved.

14

15 **A. Account 376-Steel Mains**

16 Q. Will you summarize the proposals regarding net salvage  
17 for Account 376-Steel Mains?

18

19 A. Yes. The approved net salvage is a -40 percent. In  
20 earlier years, the Commission had higher negative net  
21 salvage embedded in Peoples' rates for this account.  
22 From 1996-2006, the approved net salvage rate for this  
23 account was -45 percent. From 2006-2011, the approved  
24 net salvage rate was -50 percent. From, 2011 to 2016,  
25 the approved net salvage rate changed to negative 40



1 percent. Witness Garrett is proposing to arbitrarily  
 2 halve my recommended change and recommends a -50 percent  
 3 net salvage instead of my proposed is a -60 percent. My  
 4 proposed net salvage percentage is a gradual movement  
 5 that the Commission has approved in the past.

6  
 7 **Q.** Can you demonstrate that the net salvage for Account 376-  
 8 Steel Mains is moving more negative?

9  
 10 **A.** Yes. The information below was extracted from the net  
 11 salvage analysis provided in Exhibit No. \_\_ (DAW-1),  
 12 Appendix D of my direct testimony. These are Peoples'  
 13 moving average net salvage percentages for the past 10  
 14 years.

15  
 16 **Table 5: Account 376-Steel, Net Salvage 2009-2018**

376	2-yr	3-yr	4-yr	5-yr	6-yr	7-yr	8-yr	9-yr	10-yr	
Steel	Net	Net	Net	Net	Net	Net	Net	Net	Net	
	Salv.	Salv.	Salv.	Salv.	Salv.	Salv.	Salv.	Salv.	Salv.	
Year	%	%	%	%	%	%	%	%	%	
2009	-275%	-183%	-120%	-133%	-81%	-85%	-71%	-71%	-68%	-67%
2010	-38%	-99%	-104%	-87%	-99%	-71%	-75%	-65%	-66%	-63%
2011	-52%	-46%	-76%	-82%	-75%	-84%	-66%	-70%	-63%	-63%
2012	-320%	-113%	-85%	-107%	-108%	-98%	-104%	-83%	-85%	-76%
2013	-53%	-115%	-87%	-75%	-91%	-94%	-87%	-93%	-77%	-80%
2014	-84%	-71%	-98%	-86%	-77%	-89%	-91%	-86%	-91%	-79%
2015	-107%	-94%	-82%	-101%	-90%	-83%	-92%	-94%	-90%	-93%
2016	-98%	-102%	-95%	-86%	-100%	-92%	-86%	-93%	-94%	-91%
2017	-116%	-108%	-107%	-100%	-92%	-103%	-96%	-90%	-96%	-97%
2018	-401%	-187%	-150%	-137%	-123%	-112%	-121%	-112%	-105%	-110%

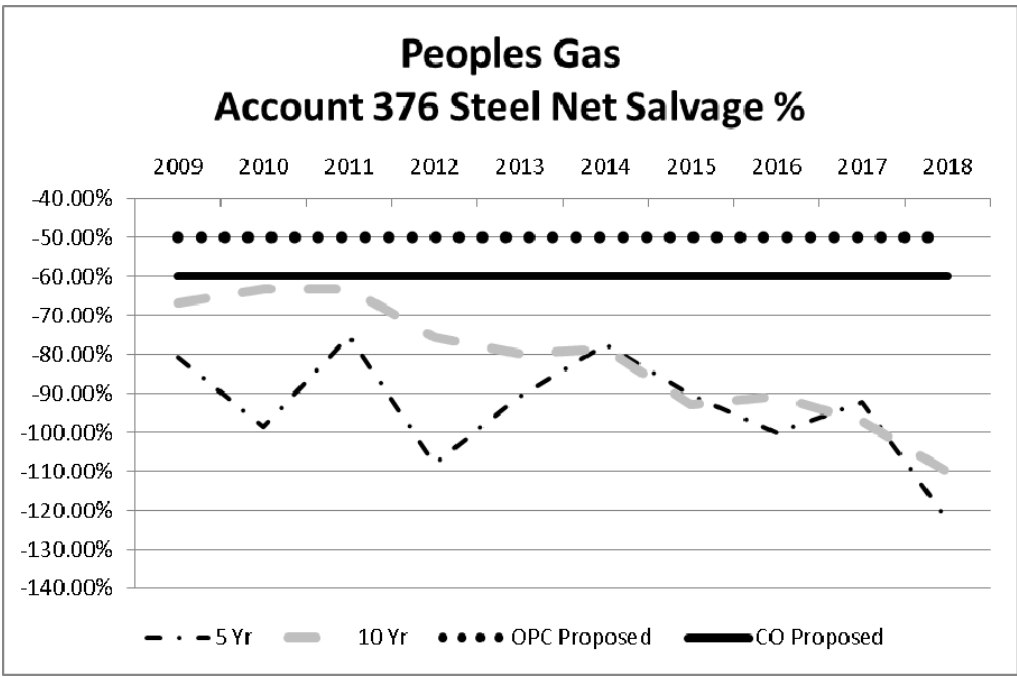
1 Q. How should the Commission interpret and correlate the  
2 information in the above table to witness Garrett's and  
3 Peoples' proposals on net salvage?  
4

5 A. First and foremost is that even 10 years ago, the net  
6 salvage indications were nearly at or above -60 percent.  
7 Between 2011-2016, the approved net salvage percentage  
8 was -60 percent. This is the most telling and important  
9 information for the Commission, in that the approved -40  
10 percent was about a third to one half of the Company's  
11 experience 10 years ago. Peoples' net salvage proposal  
12 for this account is a necessary step to help increase  
13 that recovery and reduce the deferral of recovery.  
14

15 Q. Is there anything else that would assist the Commission  
16 in evaluating the net salvage proposals for Account 376-  
17 Steel Mains?  
18

19 A. Yes. The graph below illustrates Peoples' net salvage  
20 experience over the past 10 years. The solid black line  
21 is my proposed -60 percent, which is above (less  
22 negative) than the more recent 5 and 10 year averages.  
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This further supports the idea that my recommendation includes the gradualism that witness Garrett espouses. While it is a significant change, my proposed -60 percent has been consistently experienced by Peoples over the most recent 10 years and should be approved.

**B. Account 376-Plastic Mains**

**Q.** Will you summarize the proposals regarding net salvage for Account 376-Plastic Mains?

**A.** Yes. The approved net salvage is a -25 percent, which has been the same since 2011. Witness Garrett is proposing to arbitrarily halve my recommended change and move the net salvage to -33 percent. My proposal is a -

1 40 percent.

2  
3 **Q.** Can you demonstrate that the net salvage for Account 376  
4 Plastic Mains is moving more negative?

5  
6 **A.** Yes. The information below was extracted from the net  
7 salvage analysis provided in Exhibit No. \_\_ (DAW-1),  
8 Appendix D of my direct testimony. These are Peoples'  
9 moving average net salvage percentages for the past 10  
10 years.

11  
12 **Table 6: Account 376-Plastic Net Salvage 2009-2018**

13

376 Plastic Year	Net Salv. %	2-yr Net Salv. %	3-yr Net Salv. %	4-yr Net Salv. %	5-yr Net Salv. %	6-yr Net Salv. %	7-yr Net Salv. %	8-yr Net Salv. %	9-yr Net Salv. %	10-yr Net Salv. %
2009	-84%	-63%	-51%	-57%	-44%	-39%	-35%	-35%	-35%	-35%
2010	-71%	-80%	-64%	-53%	-59%	-46%	-42%	-37%	-38%	-37%
2011	-32%	-41%	-55%	-52%	-47%	-51%	-43%	-40%	-36%	-37%
2012	-527%	-85%	-82%	-83%	-73%	-64%	-67%	-57%	-52%	-47%
2013	-53%	-103%	-70%	-70%	-73%	-67%	-61%	-64%	-56%	-52%
2014	-134%	-75%	-111%	-80%	-79%	-80%	-74%	-67%	-69%	-62%
2015	-125%	-128%	-90%	-115%	-88%	-87%	-87%	-80%	-73%	-75%
2016	-149%	-138%	-137%	-106%	-124%	-100%	-98%	-96%	-90%	-82%
2017	-31%	-59%	-69%	-75%	-71%	-81%	-73%	-73%	-74%	-72%
2018	-464%	-85%	-98%	-102%	-105%	-95%	-105%	-94%	-93%	-92%

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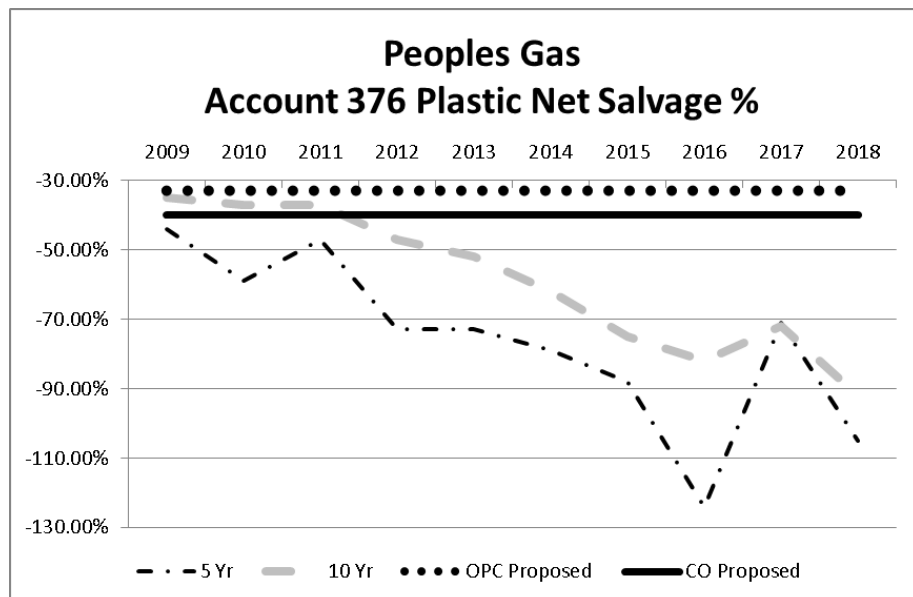
20  
21 **Q.** How should the Commission interpret and correlate the  
22 information in the above table to witness Garrett's and  
23 Peoples' proposals on net salvage?

24  
25 **A.** First and foremost is that even 10 years ago, the net

1 salvage indications were nearly at or above -40 percent  
2 for most bands. This is the most telling and important  
3 information for the Commission, in that the approved -25  
4 percent is much lower than the Company's experience.  
5 Peoples' net salvage proposal for this account is a  
6 necessary step to help increase that recovery and reduce  
7 the deferral of recovery.

8  
9 **Q.** Is there anything else that would assist the Commission  
10 in evaluating the net salvage proposals for Account 376-  
11 Plastic Mains?

12  
13 **A.** Yes. The graph below illustrates Peoples' net salvage  
14 experience over 10 years. The solid black line is my  
15 proposed -40 percent, which is above (less negative) than  
16 the more recent 5 and 10 year averages.



1 This further supports the idea that my recommendation  
2 includes the gradualism that witness Garrett espouses.  
3 While it is a significant change, my proposed -40 percent  
4 has been consistently experienced by Peoples over the  
5 most recent 10 years and should be approved.

6  
7 **C. Account 380-Steel Services**

8 **Q.** Will you summarize the proposals regarding net salvage  
9 for Account 380-Steel Services?

10  
11 **A.** Yes. The approved net salvage is a -100 percent, which  
12 has been in place since 2011. From 2006-2011, the  
13 approved net salvage for this account was -90 percent.  
14 witness Garrett recommends -125, whereas my proposal is a  
15 -150 percent.

16  
17 **Q.** Can you demonstrate that the net salvage for Account 380-  
18 Steel Services is moving more negative?

19  
20 **A.** Yes. The information below was extracted from the net  
21 salvage analysis provided in Exhibit No. \_\_ (DAW-1),  
22 Appendix D of my direct testimony. These are Peoples'  
23 moving average net salvage percentages for the past 10  
24 years.

25

**Table 7: Account 380-Steel Net Salvage 2009-2018**

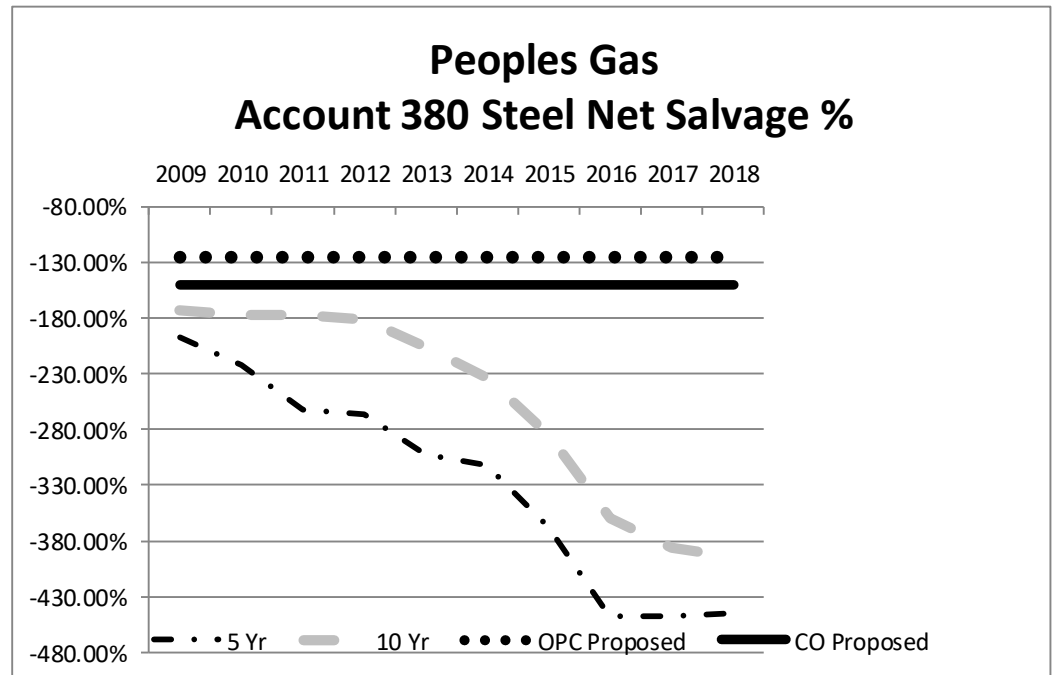
<b>380 Steel</b>	<b>Net Salv.</b>	<b>2- yr Net Salv.</b>	<b>3- yr Net Salv.</b>	<b>4- yr Net Salv.</b>	<b>5- yr Net Salv.</b>	<b>6- yr Net Salv.</b>	<b>7- yr Net Salv.</b>	<b>8- yr Net Salv.</b>	<b>9- yr Net Salv.</b>	<b>10- yr Net Salv.</b>
<b>Year</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>	<b>%</b>
2009	-351%	-312%	-268%	-214%	-197%	-184%	-177%	-173%	-174%	-173%
2010	-337%	-345%	-318%	-276%	-223%	-204%	-190%	-183%	-178%	-178%
2011	-169%	-242%	-282%	-283%	-262%	-218%	-202%	-189%	-182%	-178%
2012	-192%	-180%	-224%	-260%	-266%	-254%	-216%	-201%	-189%	-182%
2013	-375%	-322%	-285%	-293%	-303%	-300%	-280%	-241%	-222%	-207%
2014	-367%	-372%	-337%	-308%	-312%	-317%	-312%	-291%	-253%	-234%
2015	-541%	-463%	-430%	-397%	-368%	-366%	-364%	-354%	-326%	-285%
2016	-667%	-597%	-524%	-480%	-448%	-419%	-412%	-407%	-393%	-360%
2017	-353%	-473%	-495%	-468%	-447%	-426%	-404%	-400%	-397%	-386%
2018	-380%	-367%	-435%	-459%	-445%	-433%	-416%	-400%	-397%	-394%

**Q.** How should the Commission interpret and correlate the information in the above table to witness Garrett's and Peoples' proposals on net salvage?

**A.** First and foremost is that even 10 years ago, the net salvage indications were nearly at or above -100 percent! This is the most telling and important information for the Commission, in that the approved -100 percent, which is much lower than the Company's recent experience. Peoples' net salvage proposal for this account is a necessary step to help increase that recovery and reduce the deferral of recovery.

**Q.** Is there anything else that would assist the Commission in evaluating the net salvage proposals for Account 380-Steel Services?

1 **A.** Yes. The graph below illustrates Peoples' net salvage  
2 experience over the past 10 years. The solid black line  
3 is my proposed -150 percent, which is above (less  
4 negative) than the more recent 5 and 10 year averages.



16  
17 This further supports the idea that my recommendation  
18 includes the gradualism that witness Garrett espouses.  
19 While it is a significant change, my proposed -150  
20 percent has been consistently experienced by Peoples over  
21 the most recent 10 years and should be approved. By  
22 contrast, witness Garrett's -125 percent would lie  
23 entirely above this chart and reflect none of Peoples'  
24 experience over the past decade.



1 **D. Account 380-Plastic Services**

2 **Q.** Will you summarize the proposals regarding net salvage  
3 for Account 380-Plastic Services?  
4

5 **A.** Yes. The approved net salvage is a -55 percent, which  
6 has been the same since 2011. From 2006-2011, the  
7 approved net salvage rate for this account was -50  
8 percent. Witness Garrett's proposal is -68 percent. My  
9 proposed is a -80 percent.  
10

11 **Q.** Can you demonstrate that the net salvage for Account 380-  
12 Plastic Services is moving more negative?  
13

14 **A.** Yes. The information below was extracted from the net  
15 salvage analysis provided in Exhibit No. \_\_ (DAW-1),  
16 Appendix D of my direct testimony. These are Peoples'  
17 moving average net salvage percentages for the past 10  
18 years.  
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**Table 8: Account 380- Plastic Net Salvage 2009-2018**

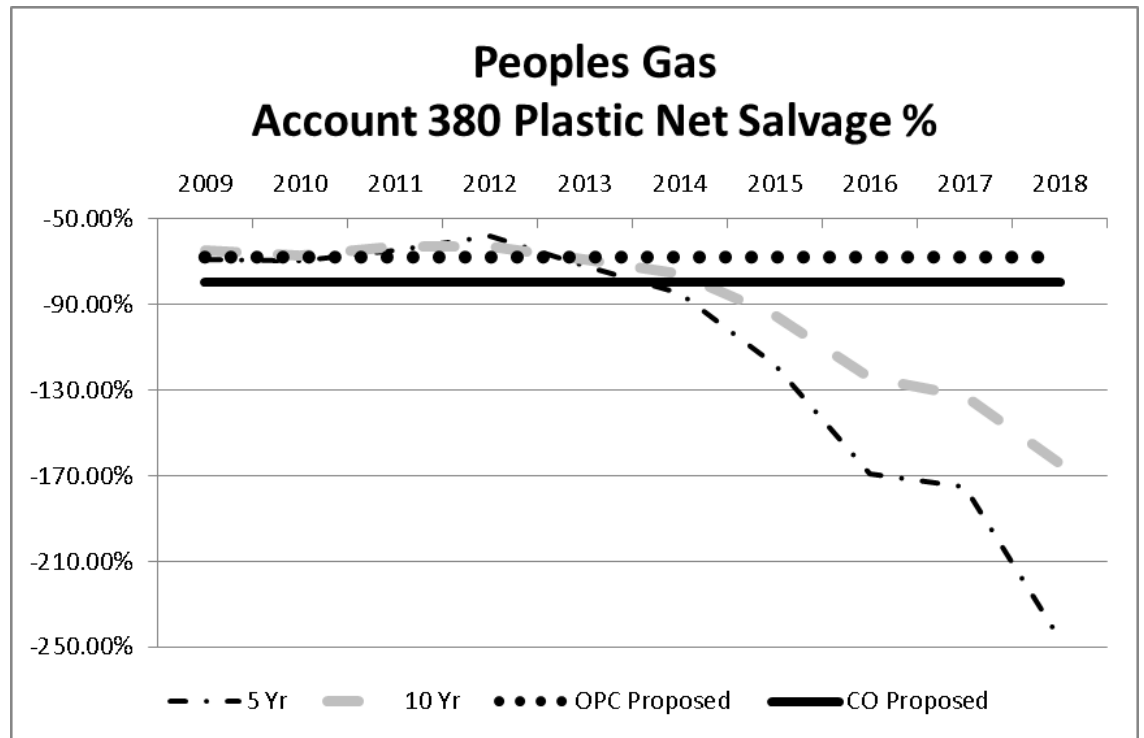
380 Plastic Year	Net Salv. %	2- yr Net Salv. %	3- yr Net Salv. %	4- yr Net Salv. %	5- yr Net Salv. %	6- yr Net Salv. %	7- yr Net Salv. %	8- yr Net Salv. %	9- yr Net Salv. %	10- yr Net Salv. %
2009	-57%	-72%	-77%	-73%	-69%	-66%	-67%	-67%	-68%	-65%
2010	-47%	-53%	-65%	-73%	-70%	-67%	-65%	-66%	-66%	-67%
2011	-30%	-37%	-44%	-55%	-65%	-65%	-63%	-62%	-63%	-63%
2012	-68%	-49%	-49%	-51%	-58%	-66%	-65%	-64%	-63%	-63%
2013	-104%	-93%	-79%	-74%	-72%	-74%	-76%	-74%	-71%	-69%
2014	-108%	-106%	-99%	-88%	-85%	-81%	-82%	-82%	-79%	-76%
2015	-331%	-173%	-143%	-131%	-118%	-112%	-106%	-105%	-100%	-95%
2016	-402%	-369%	-231%	-184%	-169%	-152%	-145%	-136%	-133%	-124%
2017	-132%	-248%	-271%	-206%	-175%	-163%	-149%	-143%	-136%	-133%
2018	-430%	-272%	-309%	-313%	-246%	-209%	-195%	-180%	-173%	-164%

**Q.** How should the Commission interpret and correlate the information in the above table to witness Garrett's and Peoples' proposals on net salvage?

**A.** First and foremost is that even 10 years ago the net salvage indications were nearly at or above -80 percent. This is the most telling and important information for the Commission, in that the approved -55 percent is not indicative of the Company's recent experience. Peoples' net salvage proposal for this account is a necessary step to help increase that recovery and reduce the deferral of recovery.

**Q.** Is there anything else that would assist the Commission in evaluating the net salvage proposals for Account 380- Plastic Services?

1 **A.** Yes. The graph below illustrates Peoples' net salvage  
2 experience over the past 10 years. The solid black line  
3 is my proposed -80 percent, which is above (less  
4 negative) than the more recent 5 and 10 year averages.



18 This further supports the idea that my recommendation  
19 includes the gradualism that witness Garrett espouses.  
20 While it is a significant change, my proposed -80 percent  
21 has been consistently experienced by Peoples over the  
22 most recent 10 years and should be approved.

23  
24 **E. Account 382-Meter Installations**

25 **Q.** Will you summarize the proposals regarding net salvage

1 for Account 382-Meter Installations?

2  
3 **A.** Yes. The approved net salvage is a -20 percent, which  
4 has been the same since 2006. The approved net salvage  
5 rate for this account was -18 percent from 1996-2006.  
6 Witness Garrett proposal is -25 percent and my proposal  
7 is -30 percent.

8  
9 **Q.** Can you demonstrate that the net salvage for Account 382  
10 Meter Installations is moving more negative?

11  
12 **A.** Yes. The information below was extracted from the net  
13 salvage analysis provided in Exhibit No. \_\_ (DAW-1),  
14 Appendix D of my direct testimony. These are Peoples'  
15 moving average net salvage percentages for the past 10  
16 years.

17  
18 **Table 9 Account 382 Steel Net Salvage 2009-2018**

19

382	2-yr	3-yr	4-yr	5-yr	6-yr	7-yr	8-yr	9-yr	10-yr
Year	Net Salv. %	Net Salv. %	Net Salv. %	Net Salv. %	Net Salv. %	Net Salv. %	Net Salv. %	Net Salv. %	Net Salv. %
2009	-36%	-30%	-24%	-24%	-21%	-22%	-25%	-27%	-28%
2010	-31%	-34%	-31%	-25%	-25%	-22%	-23%	-26%	-29%
2011	-22%	-26%	-29%	-28%	-25%	-25%	-22%	-22%	-25%
2012	-17%	-20%	-23%	-26%	-26%	-24%	-24%	-22%	-25%
2013	-38%	-29%	-26%	-27%	-29%	-28%	-26%	-26%	-23%
2014	-26%	-33%	-28%	-26%	-27%	-28%	-28%	-26%	-24%
2015	-66%	-46%	-43%	-37%	-33%	-33%	-33%	-32%	-29%
2016	-64%	-65%	-52%	-47%	-41%	-37%	-36%	-36%	-35%
2017	-68%	-66%	-66%	-54%	-50%	-44%	-39%	-38%	-38%
2018	-51%	-58%	-61%	-62%	-54%	-50%	-45%	-40%	-39%

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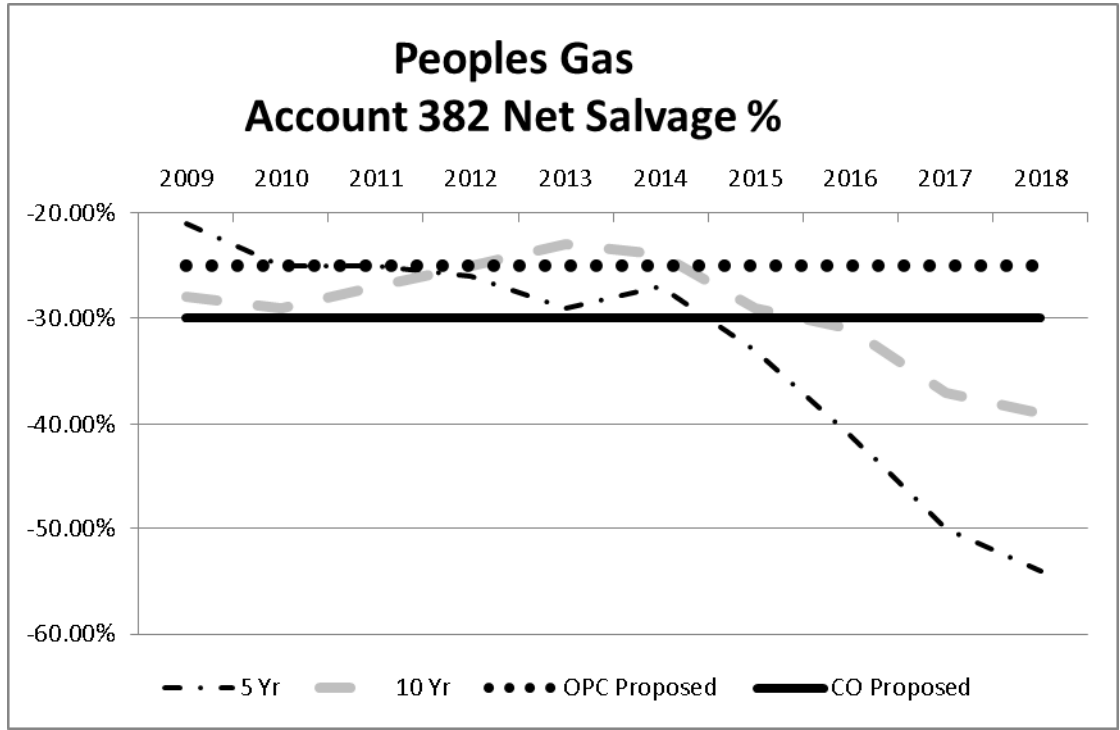
1 Q. How should the Commission interpret and correlate the  
2 information in the above table to witness Garrett's and  
3 Peoples' proposals on net salvage?  
4

5 A. First and foremost is that even 10 years ago the net  
6 salvage indications were nearly at or above -30 percent.  
7 This is the most telling and important information for  
8 the Commission, in that the approved -20 percent was  
9 about a third to one half of the Company's experience in  
10 many recent bands. Given how long it has been since the  
11 last change in the net salvage rate for this account,  
12 Peoples' net salvage proposal for this account is a  
13 necessary step to help increase that recovery and reduce  
14 the deferral of recovery.  
15

16 Q. Is there anything else that would assist the Commission  
17 in evaluating the net salvage proposals for Account 382  
18 Meter Installations?  
19

20 A. Yes. The graph below illustrates Peoples' net salvage  
21 experience over past 10 years. The solid black line is  
22 my proposed -30 percent, which is above (less negative)  
23 than the more recent 5 and 10 year averages.  
24  
25

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This further supports the idea that my recommendation includes the gradualism that witness Garrett espouses. While it is a significant change, my proposed -30 percent has been consistently experienced by Peoples over the most recent 10 years and should be approved.

**F. Account 384-House Regulator Installations**

**Q.** Will you summarize the proposals regarding net salvage for Account 384-House Regulator Installations?

**A.** Yes. The approved net salvage is a -20 percent, which has been the same since 2006. The approved net salvage rate for this account was -18 percent from 1996-2006.

witness Garrett proposal is -25 percent and my proposal is -30 percent.

**Q.** Can you demonstrate that the net salvage for Account 384-House Regulator Installations is moving more negative?

**A.** Yes. The information below was extracted from the net salvage analysis provided in Exhibit No. \_\_ (DAW-1), Appendix D of my direct testimony. These are Peoples' moving average net salvage percentages for the past 10 years.

**Table 10: Account 384-Net Salvage 2009-2018**

<b>384</b>	<b>Net</b>	<b>2-yr Net</b>	<b>3-yr Net</b>	<b>4-yr Net</b>	<b>5-yr Net</b>	<b>6-yr Net</b>	<b>7-yr Net</b>	<b>8-yr Net</b>	<b>9-yr Net</b>	<b>10-yr Net</b>
<b>Year</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>	<b>Salv. %</b>
2009	-25%	-27%	-24%	-24%	-25%	-31%	-37%	-50%	-67%	-67%
2010	-26%	-25%	-27%	-25%	-25%	-25%	-30%	-36%	-47%	-63%
2011	-19%	-22%	-23%	-25%	-24%	-24%	-24%	-29%	-34%	-44%
2012	-12%	-16%	-19%	-21%	-23%	-22%	-22%	-23%	-27%	-32%
2013	-49%	-32%	-27%	-27%	-26%	-27%	-25%	-25%	-26%	-29%
2014	-67%	-57%	-42%	-35%	-33%	-31%	-31%	-29%	-29%	-29%
2015	-214%	-124%	-90%	-69%	-54%	-49%	-45%	-42%	-37%	-37%
2016	-170%	-190%	-139%	-107%	-86%	-68%	-61%	-56%	-51%	-45%
2017	-245%	-195%	-202%	-154%	-120%	-98%	-78%	-70%	-63%	-58%

**Q.** How should the Commission interpret and correlate the information in the above table to witness Garrett's and Peoples' proposals on net salvage?

1 **A.** First and foremost is that even 10 years ago the net  
2 salvage indications were nearly at or above -30 percent.  
3 This is the most telling and important information for  
4 the Commission, in that the approved -20 percent was not  
5 indicative of the Company's experience in this account  
6 over the past 10 years. Given that the current net  
7 salvage rate has been unchanged since 2006, Peoples' net  
8 salvage proposal for this account is a necessary step to  
9 help increase that recovery and reduce the deferral of  
10 recovery.

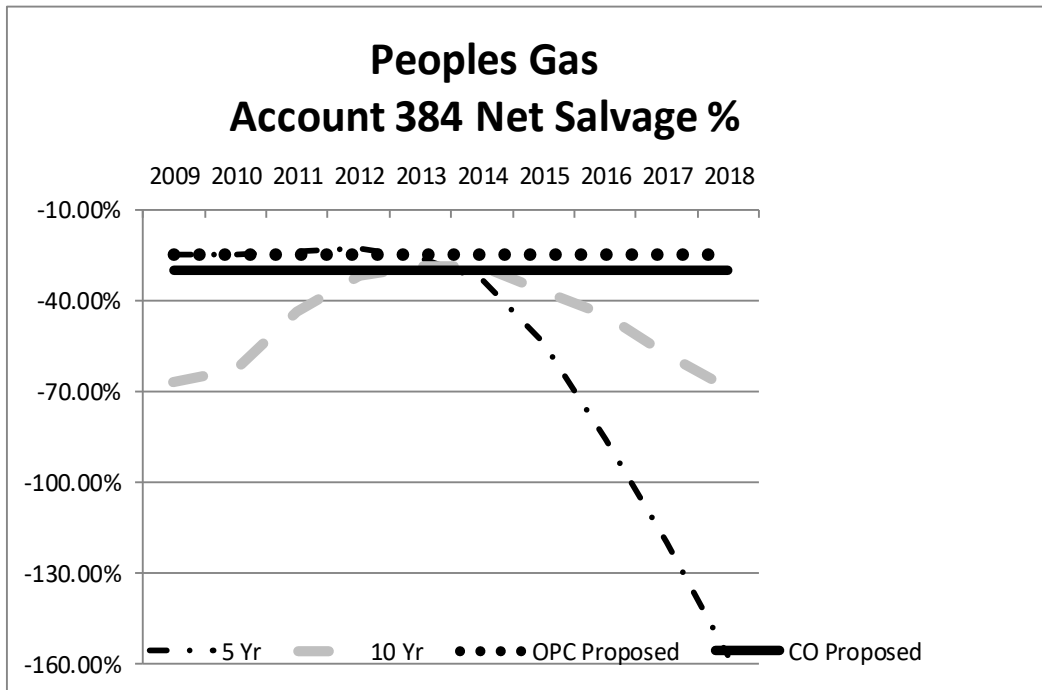
11  
12 **Q.** Is there anything else that would assist the Commission  
13 in evaluating the net salvage proposals for Account 384-  
14 House Regulator Installations?

15  
16 **A.** Yes. The graph below illustrates Peoples' net salvage  
17 experience over the past 10 years. The solid black line  
18 is my proposed -30 percent, which is above (less  
19 negative) than the more recent 5 and 10 year averages.

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This further supports the idea that my recommendation includes the gradualism that witness Garrett espouses. While it is a significant change, my proposed -30 percent has been consistently experienced by Peoples over the most recent 10 years and should be approved. By contrast, witness Garrett's -25 percent would not model Peoples' experience over the past decade.

**SUMMARY**

**Q.** Please summarize your rebuttal testimony.

**A.** I conducted a complete depreciation study using standard depreciation processes and methodologies that resulted in the recommended parameters and depreciation rates. My

1 recommended life and net salvage parameters are  
2 reasonable and more aligned with other gas utility  
3 companies in the state of Florida, as discussed above.  
4 The depreciation rates, as provided in Exhibit No. \_\_  
5 (DAW-1), Appendices A and B of my direct testimony  
6 should be applied to Peoples' plant in-service. Witness  
7 Garrett is the only party to oppose my recommendations  
8 and resulting depreciation rates. My depreciation rates,  
9 when applied to Peoples' forecasted plant in-service  
10 balances provide fair and reasonable recovery to both  
11 Peoples and its customers and should be adopted by this  
12 Commission.

13  
14 **Q.** Does this conclude your rebuttal testimony?

15  
16 **A.** Yes, it does.  
17  
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25

DOCKET NO. 20200051-GU  
DOCKET NO. 20200166-GU  
WITNESS: WATSON

**EXHIBIT**

**OF**

**DANE A. WATSON**

**ON BEHALF OF PEOPLES GAS SYSTEM**

**TABLE OF CONTENTS**

DOCUMENT NO.	TITLE	PAGE
1	Email response to discovery questions sent from OPC, dated September 9, 2020.	68
2	Comparison of Account 380 - Steel Services Observed Life Table using witness Garrett's non-existent 1970-2020 experience band compared to the actual longest experience band of 1983-2018.	74
3	RTU Detail for Accounts	77
4	Account 378 - M&R Stations Sum of squared differences computations (correcting witness Garrett's calculations).	80
5	Account 380 - Steel Services sum of squared differences computations (correcting witness Garrett's calculations).	81
6	Account 385 - Industrial M&R Stations Sum of squared differences revised computations (correcting witness Garrett's calculations)	83

DOCKET NO. 20200051-GU  
DOCKET NO. 20200166-GU  
EXHIBIT NO. (DAW-2)  
WITNESS: WATSON  
DOCUMENT NO. 1  
FILED: 09/21/2020

**Karen Ponder**

---

**From:** Dane Watson  
**Sent:** Wednesday, September 09, 2020 8:31 PM  
**To:** Karen Ponder  
**Subject:** Fwd: Request for information from experts.

Begin forwarded message:

**From:** Dylan D'Ascendis <ddascendis@scottmadden.com>  
**Date:** September 9, 2020 at 8:19:30 PM CDT  
**To:** Dane Watson <dwatson@alliancecg.net>  
**Subject: FW: Request for information from experts.**

Dane-

This may be for you.

Dylan W. D'Ascendis | Director  
1900 West Park Drive | Suite 250  
Westborough, MA 01581  
M: (609) 680-8695



[website](#) | [vCard](#) | [map](#) | [email](#)    

---

**From:** Andrew M. Brown <AB@macfar.com>  
**Sent:** Wednesday, September 09, 2020 9:14 PM  
**To:** Dylan D'Ascendis <ddascendis@scottmadden.com>; Hillary, Sean P. <SPHillary@tecoenergy.com>  
**Cc:** KFloyd@tecoenergy.com  
**Subject:** FW: Request for information from experts.

See below for the requested information concerning the testimony of witness Garrett.

Let me know if you have any questions

**Andrew M. Brown, Esq.**  
Macfarlane Ferguson & McMullen  
P.O. Box 1531, Tampa, FL 33601  
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Bio: [Andrew M. Brown](#)



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---

**From:** Fall-Fry.Mireille <[Fall-Fry.Mireille@leg.state.fl.us](mailto:Fall-Fry.Mireille@leg.state.fl.us)>  
**Sent:** Wednesday, September 9, 2020 3:49 PM  
**To:** Andrew M. Brown <[AB@macfar.com](mailto:AB@macfar.com)>  
**Cc:** [KFloyd@tecoenergy.com](mailto:KFloyd@tecoenergy.com); Davis, Phyllis <[DAVIS.PHYLLIS@leg.state.fl.us](mailto:DAVIS.PHYLLIS@leg.state.fl.us)>  
**Subject:** RE: Request for information from experts.

Andy,

Here are the responses I received from David.

1. Please identify the placement and experience band used for the following items in Mr. Garrett's testimony: Figure 16, 17, 18, 19, 20 of Mr. Garrett's direct testimony and Exhibit DJD-23.

**Figures 16 and 17 (Account 378) – Experience Band (1970-2020), Placement Band (1940-2019)**  
**Figure 18 (Account 380) – Experience Band (1970-2020), Placement Band (1910-2020)**

**Figure 19 (Account 380.02) – Experience Band (1970-2020), Placement Band (1959-2020)**  
**Figure 20 (Account 385) – Experience Band (1970-2020), Placement Band (1958-2019)**

2. Was the actuarial data used to produce results shown in Figures 16-20 and Exhibit DJD-23 the same as Mr. Watson used in his Exhibit DAW-1? If not, please provide the data base Mr. Garrett used to produce Figure 16-20 and Exhibit DJD-23.

**Yes.**

Please let me know if you need anything else.

Mireille

---

**From:** Andrew M. Brown <[AB@macfar.com](mailto:AB@macfar.com)>  
**Sent:** Wednesday, September 9, 2020 10:01  
**To:** Fall-Fry.Mireille <[Fall-Fry.Mireille@leg.state.fl.us](mailto:Fall-Fry.Mireille@leg.state.fl.us)>  
**Cc:** [KFloyd@tecoenergy.com](mailto:KFloyd@tecoenergy.com)  
**Subject:** Request for information from experts.

Mireille,

Peoples would like some additional information regarding the testimony of witness Garrett:

1. Please identify the placement and experience band used for the following items in Mr. Garrett's testimony:



Figure 16, 17, 18, 19, 20 of Mr. Garrett's direct testimony and Exhibit DJD-23.

2. Was the actuarial data used to produce results shown in Figures 16-20 and Exhibit DJD-23 the same as Mr. Watson used in his Exhibit DAW-1? If not, please provide the data base Mr. Garrett used to produce Figure 16-20 and Exhibit DJD-23.

Let me know if I will need to file a formal request or if you can provide the information in response to this email. We would need the information as soon as possible. I thought I had sent this previously but I did not get it out.

Let me know if you have any questions.

Andy

**Andrew M. Brown, Esq.**

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Bio: [Andrew M. Brown](#)

DOCKET NO. 20200051-GU  
DOCKET NO. 20200166-GU  
EXHIBIT NO. (DAW-2)  
WITNESS: WATSON  
DOCUMENT NO. 1  
FILED: 09/21/2020



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Peoples Gas Account 380 Services Steel  
Observed Life Table Comparison  
Company Band vs. OPC

Age	Company	OPC	Placement Band Experience Band
	1910-2018 1983-2018	1910-2020 1970-2020 Exhibit DJG-20	
	% Surv	% Surv	% Difference
0	100.00	100.00	0.00
0.5	99.99	100.00	(0.01)
1.5	99.83	99.88	(0.05)
2.5	99.53	99.67	(0.14)
3.5	99.21	99.45	(0.24)
4.5	98.72	99.11	(0.39)
5.5	98.03	98.62	(0.59)
6.5	97.08	97.96	(0.88)
7.5	96.34	97.43	(1.09)
8.5	95.52	96.83	(1.31)
9.5	94.22	95.84	(1.62)
10.5	93.12	94.98	(1.86)
11.5	92.14	94.24	(2.10)
12.5	91.27	93.56	(2.29)
13.5	90.11	92.65	(2.54)
14.5	89.09	91.82	(2.73)
15.5	87.86	90.80	(2.94)
16.5	86.94	90.03	(3.09)
17.5	85.96	89.20	(3.24)
18.5	85.20	88.54	(3.34)
19.5	84.13	87.63	(3.50)
20.5	82.95	86.66	(3.71)
21.5	82.00	85.85	(3.85)
22.5	81.09	85.07	(3.98)
23.5	79.89	84.00	(4.11)
24.5	78.71	82.87	(4.16)
25.5	77.67	81.88	(4.21)
26.5	76.74	81.01	(4.27)
27.5	75.70	80.03	(4.33)
28.5	74.74	79.14	(4.40)
29.5	73.83	78.29	(4.46)
30.5	73.07	77.58	(4.51)
31.5	72.20	76.76	(4.56)
32.5	71.28	75.88	(4.60)
33.5	70.38	75.02	(4.64)
34.5	69.46	74.14	(4.68)
35.5	68.56	73.27	(4.71)
36.5	67.87	72.59	(4.72)

Peoples Gas Account 380 Services Steel  
Observed Life Table Comparison  
Company Band vs. OPC

Age	Company	OPC	Placement Band Experience Band
	1910-2018 1983-2018	1910-2020 1970-2020 Exhibit DJG-20	
	% Surv	% Surv	% Difference
37.5	67.05	71.79	(4.74)
38.5	66.36	71.12	(4.76)
39.5	65.60	70.36	(4.76)
40.5	64.83	69.62	(4.79)
41.5	64.09	68.93	(4.84)
42.5	63.33	68.21	(4.88)
43.5	62.48	67.38	(4.90)
44.5	61.60	66.55	(4.95)
45.5	60.52	65.59	(5.07)
46.5	59.53	64.76	(5.23)
47.5	58.50	63.89	(5.39)
48.5	57.59	63.09	(5.50)
49.5	56.29	61.90	(5.61)
50.5	55.28	60.97	(5.69)
51.5	54.12	59.94	(5.82)
52.5	52.76	58.79	(6.03)
53.5	51.69	57.90	(6.21)
54.5	50.74	57.06	(6.32)
55.5	49.63	56.00	(6.37)
56.5	48.94	55.33	(6.39)
57.5	48.38	54.76	(6.38)
58.5	47.60	53.95	(6.35)
59.5	46.55	52.96	(6.41)
60.5	45.87	52.57	(6.70)
61.5	44.98	52.06	(7.08)
62.5	43.34	50.49	(7.15)
63.5	41.07	48.08	(7.01)
64.5	36.54	42.98	(6.44)
65.5	34.72	40.79	(6.07)
66.5	33.04	38.73	(5.69)
67.5	31.42	36.78	(5.36)
68.5	30.25	35.35	(5.10)
69.5	29.23	34.06	(4.83)
70.5	28.26	32.84	(4.58)
71.5	27.75	32.24	(4.49)
72.5	27.53	32.00	(4.47)
73.5	27.28	31.68	(4.40)
74.5	26.65	30.83	(4.18)

Peoples Gas Account 380 Services Steel  
 Observed Life Table Comparison  
 Company Band vs. OPC

Age	Company	OPC	Placement Band Experience Band
	1910-2018 1983-2018	1910-2020 1970-2020 Exhibit DJG-20	
	% Surv	% Surv	% Difference
75.5	25.82	29.65	(3.83)
76.5	25.01	28.59	(3.58)
77.5	24.37	27.75	(3.38)
78.5	23.87	27.04	(3.17)
79.5	23.62	26.68	(3.06)
80.5	23.06	25.82	(2.76)
81.5	22.95	25.66	(2.71)
82.5	22.21	24.70	(2.49)
83.5	20.52	22.08	(1.56)
84.5	19.74	20.81	(1.07)
85.5	19.55	20.48	(0.93)
86.5	18.71	19.10	(0.39)
87.5	16.32	14.97	1.35
88.5	13.02	10.51	2.51
89.5	12.14	9.99	2.15
90.5	11.26	9.21	2.05
91.5	5.64		5.64
92.5	2.77		2.77

Peoples Gas  
Retirement Components by Plant Acct  
At December 31, 2018

Row Labels	Sum of cost
<b>37800</b>	<b>17,444,813.24</b>
000-00 MISCELLANEOUS	737,015.85
043-00 CATHODIC PROTECTION	22,739.00
045-00 TELEMETERING EQ	60,819.38
046-00 MONITOR	37,485.72
046-00 PANEL	8,253.38
046-00 PERSONAL COMPUTERS	5,363.10
048-00 TRAILER	1,921.40
051-00 AIR CONDITION EQUIP	1,141.77
051-00 FENCE	30,594.19
054-00 REGULATORS	687,741.64
054-00 RELIEF VALVES	71,478.53
061-00 DISTRICT REGULATOR STATION	9,986,155.93
061-00 GATE STATION	320,558.07
061-00 MEASURING AND REGULATION STA	2,210,794.42
061-00 ODORIZER	104,990.53
065-00 ALLOWANCE	6,269.79
074-00 LAND	35,191.76
090-00 METER SET	0.00
1 STEEL	12,746.31
2 STEEL	28,077.23
4 STEEL	79,741.36
8 STEEL	2,674.75
Non-unitized	2,993,059.13
<b>38000</b>	<b>52,662,457.35</b>
>8 ALL	161,201.76
000-00 MISCELLANEOUS	64,138.41
043-00 CATHODIC PROTECTION	2,780,096.82
1 STEEL	2,176,392.84
1/2 PLASTIC	460.53
1/2 STEEL	2,801,994.46
1-1/2 STEEL	367,287.32
1-1/4 STEEL	12,159,442.10
2 STEEL	7,809,022.16
3 STEEL	363,519.78
3/4 STEEL	21,505,461.09
4 STEEL	1,943,681.06
6 STEEL	460,638.27
Non-unitized	69,120.75
<b>38002</b>	<b>339,356,775.69</b>
000-00 MISCELLANEOUS	668,525.97
1 PLASTIC	5,642,156.25
1/2 PLASTIC	80,911,321.17
1-1/2 PLASTIC	107,468.11
1-1/4 PLASTIC	45,297,126.77
2 PLASTIC	35,817,690.88
3 PLASTIC	88,078.99
3/4 PLASTIC	148,967,060.72

DOCKET NO. 20200051-GU  
DOCKET NO. 20200166-GU  
EXHIBIT NO. (DAW-2)  
WITNESS: WATSON  
DOCUMENT NO. 3  
FILED: 09/21/2020

Peoples Gas  
Retirement Components by Plant Acct  
At December 31, 2018

Row Labels	Sum of cost
3/4 STEEL	1,140,660.30
4 PLASTIC	2,774,021.36
6 PLASTIC	195,973.12
Non-unitized	17,746,692.05
<b>38500</b>	<b>10,029,996.20</b>
000-00 MISCELLANEOUS	819,301.04
055-00 METER INSTALLATIONS	2,849.00
057-00 INDUSTRIAL INSTALLATION	5,226,642.99
057-00 INDUSTRIAL INSTALLATIONS	3,070,282.21
061-00 GATE STATION	81,317.01
061-00 TELEM	2,125.67
090-00 METER SET	827,478.28
(blank)	
(blank)	
<b>Grand Total</b>	<b>419,494,042.48</b>

Account 378  
Placemement Band 1940-2018  
Expereince Band 1983-2018

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	Exposures (Dollars)	Observed Life Table (OLT)	Company R1.5-40	OPC R1-46	Company SSD	OPC SSD
0.0	18,157,363	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	16,750,541	99.97%	99.82%	99.74%	0.0000	0.0000
1.5	15,693,713	99.97%	99.46%	99.21%	0.0000	0.0001
2.5	14,131,767	99.91%	98.89%	98.67%	0.0001	0.0002
3.5	12,656,952	99.74%	98.49%	98.12%	0.0002	0.0003
4.5	11,146,463	99.02%	97.86%	97.55%	0.0001	0.0002
5.5	9,676,328	98.24%	97.42%	96.96%	0.0001	0.0002
6.5	7,316,097	97.81%	96.97%	96.06%	0.0001	0.0003
7.5	6,619,235	96.96%	96.26%	95.44%	0.0000	0.0002
8.5	6,310,635	96.63%	95.76%	94.80%	0.0001	0.0003
9.5	5,737,283	95.37%	94.99%	94.15%	0.0000	0.0001
10.5	5,545,941	94.45%	94.44%	93.49%	0.0000	0.0001
11.5	5,184,068	94.10%	93.60%	92.46%	0.0000	0.0003
12.5	4,912,835	91.42%	93.01%	91.77%	0.0003	0.0000
13.5	4,656,075	90.39%	92.09%	91.05%	0.0003	0.0000
14.5	4,465,881	88.49%	91.45%	90.33%	0.0009	0.0003
15.5	4,033,546	87.00%	90.79%	89.59%	0.0014	0.0007
16.5	3,712,095	86.83%	89.76%	88.84%	0.0009	0.0004
17.5	2,904,112	86.32%	89.04%	87.68%	0.0007	0.0002
18.5	2,744,453	85.87%	87.91%	86.89%	0.0004	0.0001
19.5	2,219,652	84.43%	87.13%	86.08%	0.0007	0.0003
20.5	1,949,428	83.80%	85.90%	85.25%	0.0004	0.0002
21.5	1,820,778	82.25%	85.04%	84.41%	0.0008	0.0005
22.5	1,728,372	81.15%	83.70%	83.55%	0.0007	0.0006
23.5	1,661,132	80.14%	82.76%	82.22%	0.0007	0.0004
24.5	1,464,111	78.84%	81.29%	81.30%	0.0006	0.0006
25.5	1,287,297	77.81%	80.27%	80.37%	0.0006	0.0007
26.5	1,243,459	77.04%	79.21%	79.41%	0.0005	0.0006
27.5	1,110,079	72.82%	77.56%	78.44%	0.0022	0.0032
28.5	1,002,797	71.47%	76.40%	77.43%	0.0024	0.0036
29.5	917,335	69.64%	74.60%	75.88%	0.0025	0.0039
30.5	873,200	68.05%	73.35%	74.82%	0.0028	0.0046
31.5	758,317	66.37%	71.40%	73.73%	0.0025	0.0054
32.5	674,844	65.09%	70.05%	72.62%	0.0025	0.0057
33.5	632,061	63.75%	67.94%	71.47%	0.0018	0.0060
34.5	510,160	62.94%	66.49%	70.31%	0.0013	0.0054
35.5	494,234	62.45%	64.23%	68.51%	0.0003	0.0037
36.5	458,843	60.29%	62.67%	67.28%	0.0006	0.0049
37.5	416,115	58.84%	61.08%	66.02%	0.0005	0.0052
38.5	374,146	57.15%	58.61%	64.74%	0.0002	0.0058
39.5	343,380	56.57%	56.93%	63.43%	0.0000	0.0047
40.5	324,008	53.50%	54.34%	61.42%	0.0001	0.0063
41.5	274,509	48.89%	52.57%	60.06%	0.0014	0.0125
42.5	296,793	47.50%	49.88%	58.67%	0.0006	0.0125
43.5	211,604	35.96%	48.05%	57.25%	0.0146	0.0453
44.5	193,315	35.39%	45.28%	55.82%	0.0098	0.0417



Account 378  
Placemement Band 1940-2018  
Expereince Band 1983-2018

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	Exposures (Dollars)	Observed Life Table (OLT)	Company R1.5-40	OPC R1-46	Company SSD	OPC SSD
45.5	177,134	34.60%	43.42%	54.37%	0.0078	0.0391
46.5	167,466	33.67%	41.55%	52.15%	0.0062	0.0341
47.5	151,672	31.40%	38.74%	50.66%	0.0054	0.0371
48.5	147,836	31.09%	36.87%	49.14%	0.0033	0.0326
49.5	132,435	30.15%	34.08%	47.62%	0.0015	0.0305
50.5	106,318	28.30%	32.24%	46.08%	0.0016	0.0316
51.5	95,415	25.98%	29.53%	44.53%	0.0013	0.0344
52.5	70,572	20.90%	27.76%	42.20%	0.0047	0.0454
53.5	50,578	15.63%	25.17%	40.64%	0.0091	0.0626
54.5	43,170	14.84%	23.50%	39.07%	0.0075	0.0587
55.5	38,480	13.57%	21.07%	37.50%	0.0056	0.0573
56.5	29,510	11.59%	19.52%	35.94%	0.0063	0.0593
57.5	28,476	11.42%	18.03%	33.59%	0.0044	0.0491
58.5	15,440	11.04%	15.89%	32.04%	0.0024	0.0441
59.5	6,427	11.04%	14.54%	30.50%	0.0012	0.0379
60.5	456	9.62%	12.63%	28.97%	0.0009	0.0374
61.5	5,601	9.62%	11.44%	27.45%	0.0003	0.0318
Sum of Squared Differences				[8]	0.1260	0.9109
Up to 1% of Beginning Exposures				[9]	0.0565	0.1879

[1] Age in years using half-year convention  
[2] Dollars exposed to retirement at the beginning of each age interval  
[3] Observed life table from depreciation Study workpapers  
[4] The Company's selected Iowa curve compared to the OLT.  
[5] OPC selected Iowa curve to be compared to the OLT.  
[6] = ([4] - [3])^2. Squared difference between each point on the Company's curve and the observed life table..  
[7] = ([5] - [3])^2. Squared difference between each point on the OPC proposed curve and the observed life table.  
[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.  
[9] = Sum of squared differences up to the 1% of beginning exposures cut-off.  
\*The bold horizontal line represents the 1% of beginning exposures cut-off.

Account 380 Steel Services  
Placemement Band 1910-2018  
Expearence Band 1983-2018

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	Exposures (Dollars)	Observed Life Table (OLT)	Company R0.5-52	OPC R0.5-57	Company SSD	OPC SSD
0.0	43,599,898	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	42,287,595	99.99%	100.00%	100.00%	0.0000	0.0000
1.5	40,546,135	99.83%	99.24%	99.24%	0.0000	0.0000
2.5	38,209,452	99.53%	98.47%	98.47%	0.0001	0.0001
3.5	37,399,244	99.21%	97.70%	97.70%	0.0002	0.0002
4.5	36,429,652	98.72%	96.92%	97.31%	0.0003	0.0002
5.5	34,877,862	98.03%	96.13%	96.52%	0.0004	0.0002
6.5	33,784,220	97.08%	95.33%	95.73%	0.0003	0.0002
7.5	33,546,593	96.34%	94.53%	94.93%	0.0003	0.0002
8.5	33,779,614	95.52%	93.72%	94.53%	0.0003	0.0001
9.5	34,174,267	94.22%	92.90%	93.72%	0.0002	0.0000
10.5	33,771,497	93.12%	92.07%	92.90%	0.0001	0.0000
11.5	33,300,287	92.14%	91.24%	92.07%	0.0001	0.0000
12.5	33,002,236	91.27%	90.40%	91.66%	0.0001	0.0000
13.5	32,548,072	90.11%	89.98%	90.82%	0.0000	0.0000
14.5	32,239,857	89.09%	89.13%	89.98%	0.0000	0.0001
15.5	31,974,256	87.86%	88.28%	89.13%	0.0000	0.0002
16.5	31,299,705	86.94%	87.41%	88.71%	0.0000	0.0003
17.5	31,415,848	85.96%	86.54%	87.85%	0.0000	0.0004
18.5	29,400,812	85.20%	85.67%	86.98%	0.0000	0.0003
19.5	28,213,001	84.13%	84.78%	86.11%	0.0000	0.0004
20.5	26,955,600	82.95%	83.89%	85.67%	0.0001	0.0007
21.5	26,033,324	82.00%	82.99%	84.78%	0.0001	0.0008
22.5	26,090,815	81.09%	82.08%	83.89%	0.0001	0.0008
23.5	26,703,589	79.89%	81.17%	82.99%	0.0002	0.0010
24.5	25,660,241	78.71%	80.24%	82.54%	0.0002	0.0015
25.5	24,584,730	77.67%	79.30%	81.63%	0.0003	0.0016
26.5	23,462,330	76.74%	78.83%	80.70%	0.0004	0.0016
27.5	22,078,393	75.70%	77.88%	79.77%	0.0005	0.0017
28.5	21,000,996	74.74%	76.92%	79.30%	0.0005	0.0021
29.5	20,055,949	73.83%	75.95%	78.36%	0.0004	0.0021
30.5	19,232,062	73.07%	74.96%	77.40%	0.0004	0.0019
31.5	18,537,264	72.20%	73.97%	76.44%	0.0003	0.0018
32.5	17,872,011	71.28%	72.96%	75.46%	0.0003	0.0017
33.5	17,051,712	70.38%	71.94%	74.96%	0.0002	0.0021
34.5	16,540,408	69.46%	70.91%	73.97%	0.0002	0.0020
35.5	15,995,231	68.56%	69.87%	72.96%	0.0002	0.0019
36.5	15,430,798	67.87%	68.81%	71.94%	0.0001	0.0017
37.5	14,736,578	67.05%	67.74%	71.43%	0.0000	0.0019
38.5	14,345,794	66.36%	66.65%	70.39%	0.0000	0.0016
39.5	13,576,599	65.60%	66.11%	69.34%	0.0000	0.0014
40.5	12,718,784	64.83%	65.00%	68.27%	0.0000	0.0012
41.5	12,242,044	64.09%	63.89%	67.74%	0.0000	0.0013
42.5	11,711,091	63.33%	62.76%	66.65%	0.0000	0.0011
43.5	10,966,187	62.48%	61.62%	65.56%	0.0001	0.0009
44.5	9,896,030	61.60%	60.47%	64.45%	0.0001	0.0008
45.5	8,632,582	60.52%	59.30%	63.89%	0.0001	0.0011
46.5	7,787,528	59.53%	58.12%	62.76%	0.0002	0.0010
47.5	7,105,946	58.50%	56.93%	61.62%	0.0002	0.0010
48.5	6,660,632	57.59%	55.73%	60.47%	0.0003	0.0008
49.5	6,045,065	56.29%	54.52%	59.88%	0.0003	0.0013
50.5	5,454,500	55.28%	53.30%	58.71%	0.0004	0.0012
51.5	4,730,559	54.12%	52.07%	57.53%	0.0004	0.0012
52.5	4,122,410	52.76%	51.45%	56.33%	0.0002	0.0013
53.5	3,789,576	51.69%	50.20%	55.73%	0.0002	0.0016
54.5	3,482,585	50.74%	48.95%	54.52%	0.0003	0.0014

Account 380 Steel Services  
Placemement Band 1910-2018  
Expearence Band 1983-2018

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	Exposures (Dollars)	Observed Life Table (OLT)	Company R0.5-52	OPC R0.5-57	Company SSD	OPC SSD
55.5	3,302,636	49.63%	47.69%	53.30%	0.0004	0.0013
56.5	3,147,506	48.94%	46.43%	52.07%	0.0006	0.0010
57.5	2,994,205	48.38%	45.15%	51.45%	0.0010	0.0009
58.5	2,524,661	47.60%	43.88%	50.20%	0.0014	0.0007
59.5	1,404,344	46.55%	42.60%	48.95%	0.0016	0.0006
60.5	1,169,734	45.87%	41.32%	47.69%	0.0021	0.0003
61.5	1,043,267	44.98%	40.03%	47.06%	0.0024	0.0004
62.5	924,497	43.34%	38.75%	45.79%	0.0021	0.0006
63.5	824,467	41.07%	37.47%	44.52%	0.0013	0.0012
64.5	703,767	36.54%	36.19%	43.24%	0.0000	0.0045
65.5	628,591	34.72%	35.55%	42.60%	0.0001	0.0062
66.5	565,842	33.04%	34.27%	41.32%	0.0002	0.0069
67.5	503,005	31.42%	33.00%	40.03%	0.0002	0.0074
68.5	471,847	30.25%	31.73%	38.75%	0.0002	0.0072
69.5	436,383	29.23%	30.48%	38.11%	0.0002	0.0079
70.5	373,561	28.26%	29.23%	36.83%	0.0001	0.0073
71.5	344,472	27.75%	27.99%	35.55%	0.0000	0.0061
72.5	326,125	27.53%	26.76%	34.27%	0.0001	0.0045
73.5	321,681	27.28%	25.55%	33.63%	0.0003	0.0040
74.5	305,996	26.65%	24.35%	32.37%	0.0005	0.0033
75.5	273,960	25.82%	23.16%	31.11%	0.0007	0.0028
76.5	257,071	25.01%	22.00%	29.85%	0.0009	0.0023
77.5	242,544	24.37%	20.85%	29.23%	0.0012	0.0024
78.5	237,475	23.87%	20.28%	27.99%	0.0013	0.0017
79.5	232,965	23.62%	19.16%	26.76%	0.0020	0.0010
80.5	195,114	23.06%	18.06%	25.55%	0.0025	0.0006
81.5	188,433	22.95%	16.98%	24.95%	0.0036	0.0004
82.5	176,211	22.21%	15.93%	23.75%	0.0039	0.0002
83.5	162,806	20.52%	14.90%	22.58%	0.0032	0.0004
84.5	152,869	19.74%	13.90%	21.42%	0.0034	0.0003
85.5	146,961	19.55%	12.92%	20.28%	0.0044	0.0001
86.5	139,281	18.71%	11.97%	19.72%	0.0045	0.0001
87.5	91,167	16.32%	11.05%	18.61%	0.0028	0.0005
88.5	30,332	13.02%	10.16%	17.52%	0.0008	0.0020
89.5	28,280	12.14%	9.30%	16.45%	0.0008	0.0019
90.5	26,240	11.26%	8.46%	15.93%	0.0008	0.0022
91.5	8,384	5.64%	8.06%	14.90%	0.0006	0.0086
95.5	0	2.77%	7.27%	13.90%	0.0020	0.0124
Sum of Squared Differences				[8]	0.0643	0.1644
Up to 1% of Beginning Exposures				[9]	0.0239	0.0992

[1] Age in years using half-year convention  
[2] Dollars exposed to retirement at the beginning of each age interval  
[3] Observed life table from depreciation Study workpapers  
[4] The Company's selected Iowa curve compared to the OLT.  
[5] OPC selected Iowa curve to be compared to the OLT.  
[6] =  $((4) - [3])^2$ . Squared difference between each point on the Company's curve and the observed life table..  
[7] =  $((5) - [3])^2$ . Squared difference between each point on the OPC proposed curve and the observed life table.  
[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.  
[9] = Sum of squared differences up to the 1% of beginning exposures cut-off.  
\*The bold horizontal line represents the 1% of beginning exposures cut-off.

Account 385  
Placement Band 1958-2018  
Expereince Band 1983-2018

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	Exposures (Dollars)	Observed Life Table (OLT)	Company R3-37	OPC R3-41	Company SSD	OPC SSD
0.0	10,865,020	100.00%	100.00%	100.00%	0.0000	0.0000
0.5	10,702,722	100.00%	99.98%	99.98%	0.0000	0.0000
1.5	10,847,237	100.00%	99.93%	99.95%	0.0000	0.0000
2.5	10,301,423	99.98%	99.88%	99.88%	0.0000	0.0000
3.5	10,307,934	99.98%	99.80%	99.83%	0.0000	0.0000
4.5	10,260,686	99.23%	99.70%	99.77%	0.0000	0.0000
5.5	10,111,945	98.72%	99.62%	99.66%	0.0001	0.0001
6.5	10,112,668	98.60%	99.48%	99.57%	0.0001	0.0001
7.5	10,119,076	98.53%	99.30%	99.42%	0.0001	0.0001
8.5	10,132,317	98.43%	99.16%	99.30%	0.0001	0.0001
9.5	10,069,872	97.77%	98.92%	99.09%	0.0001	0.0002
10.5	9,994,449	97.34%	98.63%	98.92%	0.0002	0.0002
11.5	9,957,206	97.11%	98.30%	98.63%	0.0001	0.0002
12.5	9,504,356	96.71%	98.04%	98.41%	0.0002	0.0003
13.5	9,153,689	96.09%	97.60%	98.17%	0.0002	0.0004
14.5	8,968,384	95.94%	97.08%	97.75%	0.0001	0.0003
15.5	8,382,605	95.76%	96.70%	97.43%	0.0001	0.0003
16.5	8,171,821	95.67%	96.05%	96.90%	0.0000	0.0002
17.5	8,111,842	95.56%	95.31%	96.49%	0.0000	0.0001
18.5	7,444,921	95.39%	94.47%	95.81%	0.0001	0.0000
19.5	6,946,019	94.98%	93.84%	95.31%	0.0001	0.0000
20.5	6,414,508	92.54%	92.81%	94.47%	0.0000	0.0004
21.5	5,994,660	90.69%	91.65%	93.84%	0.0001	0.0010
22.5	5,620,465	88.62%	90.80%	93.17%	0.0005	0.0021
23.5	5,394,040	88.30%	89.40%	92.05%	0.0001	0.0014
24.5	4,696,400	87.63%	87.84%	91.23%	0.0000	0.0013
25.5	4,287,913	86.95%	86.71%	89.88%	0.0000	0.0009
26.5	4,046,901	86.83%	84.85%	88.90%	0.0004	0.0004
27.5	3,665,592	85.70%	82.80%	87.29%	0.0008	0.0003
28.5	2,247,228	82.78%	80.53%	86.11%	0.0005	0.0011
29.5	1,898,803	79.88%	78.89%	84.85%	0.0001	0.0025
30.5	1,357,914	78.26%	76.22%	82.80%	0.0004	0.0021
31.5	1,102,004	76.72%	73.30%	81.31%	0.0012	0.0021
32.5	731,846	75.60%	71.21%	78.89%	0.0019	0.0011
33.5	491,546	69.02%	67.84%	77.14%	0.0001	0.0066
34.5	361,397	66.77%	64.21%	74.31%	0.0007	0.0057
35.5	249,966	62.54%	61.64%	72.27%	0.0001	0.0095
36.5	157,601	60.97%	57.57%	69.00%	0.0012	0.0065
37.5	112,865	55.16%	53.29%	66.66%	0.0003	0.0132
38.5	78,117	40.34%	48.83%	64.21%	0.0072	0.0570
39.5	72,967	37.84%	45.79%	60.31%	0.0063	0.0505
40.5	71,092	36.87%	41.16%	57.57%	0.0018	0.0429
41.5	62,343	35.62%	36.54%	53.29%	0.0001	0.0312
42.5	57,696	33.71%	33.49%	50.34%	0.0000	0.0277
43.5	47,507	30.72%	29.03%	45.79%	0.0003	0.0227

Account 385  
 Placement Band 1958-2018  
 Experience Band 1983-2018

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Age (Years)	Exposures (Dollars)	Observed Life Table (OLT)	Company R3-37	OPC R3-41	Company SSD	OPC SSD
44.5	35,852	28.99%	24.78%	42.71%	0.0018	0.0188
45.5	31,944	25.83%	22.10%	39.62%	0.0014	0.0190
46.5	25,358	21.08%	18.35%	35.00%	0.0007	0.0194
47.5	7,431	11.90%	14.96%	31.98%	0.0009	0.0403
48.5	1,672	11.90%	11.97%	27.59%	0.0000	0.0246
49.5	742	11.90%	10.20%	24.78%	0.0003	0.0166
50.5	0	18.20%	7.86%	20.81%	0.0107	0.0007
Sum of Squared Differences				[8]	0.0416	0.4319
Up to 1% of Beginning Exposures				[9]	0.0100	0.0606

[1] Age in years using half-year convention

[2] Dollars exposed to retirement at the beginning of each age interval

[3] Observed life table from depreciation Study workpapers

[4] The Company's selected Iowa curve compared to the OLT.

[5] OPC selected Iowa curve to be compared to the OLT.

[6] =  $([4] - [3])^2$ . Squared difference between each point on the Company's curve and the observed life table..

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[8] = Sum of squared differences. The smallest SSD represents the best mathematical fit.

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\*The bold horizontal line represents the 1% of beginning exposures cut-off.