November 20, 2020

By Electronic Filing

Andrew S. Johnston
Executive Secretary
Public Service Commission
State of Maryland
6 St. Paul Street, 16th Floor
Baltimore, Maryland 21202-6806

Re: Case No. 9651
In the Matter of the Application of Washington Gas Light Company
For Authority to Increase its Existing Rates and Charges and to Revise
Its Terms and Conditions for Gas Service

Dear Mr. Johnston:

Enclosed for filing is the Direct Testimony of Bruce Oliver and Timothy Oliver on behalf of the Apartment and Office Building Association of Metropolitan Washington for filing in the above-captioned proceeding.

If you have any questions, please contact me at ffrancis@aoba-metro.org or call my cell at (301) 518-9700. Thank you for your attention in this matter.

Sincerely,

Frann G. Francis

Frann G. Francis, Esq.

cc: All parties of record

CERTIFICATE OF SERVICE

Case No. 9651

I hereby certify on this 19th day of November 2020, that the attached Direct Testimony of Bruce Oliver and Timothy Oliver were filed electronically on behalf of the Apartment and Office Building Association of Metropolitan Washington and copies were sent electronically to the service list below.

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AOBA ___ (BRO)

Before the

PUBLIC SERVICE COMMISSION
OF MARYLAND

IN THE MATTER OF	)	
	)	
The Application of Washington Gas	)	
Light Company for Authority to Increase	)	**Case No. 9651**
Its Existing Rates and Charges and to	)	
Revise Its Terms and Conditions for	)	
Gas Service	)	

VOLUME I OF II: DIRECT TESTIMONY OF AOBA WITNESS BRUCE R. OLIVER

November 20, 2020

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DIRECT TESTIMONY OF BRUCE R. OLIVER
MD PSC Case No. 9651

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MD PSC Case No. 9651

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DIRECT TESTIMONY OF BRUCE R. OLIVER
MDPSC Case No. 9651

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Bruce R. Oliver. My business address is 7103 Laketree Drive Fairfax Station, Virginia, 22039.

Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?

A. I am employed by Revilo Hill Associates, Inc., and serve as President of the firm, and I manage the firm's business and consulting activities. I direct the preparation and presentation of economic, utility planning, and policy analyses for clients.

Q. ON WHOSE BEHALF DO YOU APPEAR IN THIS PROCEEDING?

A. I appear on behalf of the Apartment and Office Building Association of Metropolitan Washington (“AOBA”).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My testimony in this proceeding addresses issues relating to the Washington Gas Light Company (“Washington Gas,” "WG" or "the Company") Application for authority to increase its existing rates and charges for gas service. This

testimony responds to portions of the pre-filed Washington Gas direct testimony and schedules of witnesses O'Brien, Bonawitz, D'Ascendis, Tuoriniemi, Gibson, Johnson, and Wagner.

Q. PLEASE SUMMARIZE YOUR EXPERIENCE AND QUALIFICATIONS.

A. I am an economist specializing in the areas of utility rates, energy, and regulatory policy matters. I have over 40 years of experience in the analysis of energy and utility policy issues. That experience includes employment in management positions in the rate departments of two major utilities (the Pacific Gas and Electric Company and the Potomac Electric Power Company), as well as service in management and senior staff positions for three firms engaged in energy, utility and public policy consulting. Those firms include: Revilo Hill Associates, Inc., the Resource Dynamics Corporation, and ICF Incorporated.

As a consultant, I have served a diverse group of clients on issues encompassing a wide range of energy and utility related matters. My clients have included state regulatory commissions, utilities, state Attorneys General, consumer advocacy groups, municipal governments, federal agencies, commercial and industrial energy users, hospitals and universities, suppliers of equipment and services to utility markets, residential consumer intervenors, the Electric Power Research Institute (EPRI), and the World Bank. Projects for those clients have included work on gas, electric, water, and wastewater utility regulatory proceedings, as well as analyses and forecasts of supply, demand, and prices for utility and non-utility energy markets. I have also assisted a number of commer-

cial and industrial energy users in the negotiation of a wide range of energy service contracts, including contracts for the procurement of competitive electricity and natural gas services.

To date, I have filed over 400 separate pieces of testimony in more than 300 proceedings before regulatory commissions in 24 jurisdictions. The regulatory jurisdictions in which I have testified include: the states of Pennsylvania, New York, New Jersey, Maryland, Delaware, Virginia, North Carolina, Rhode Island, Massachusetts, Vermont, Connecticut, Ohio, Illinois, Wisconsin, Arizona, New Mexico, South Dakota, and California, as well as the District of Columbia, Guam, the Virgin Islands, the City of Philadelphia, the Province of Alberta, Canada, and the U.S. Federal Energy Regulatory Commission (FERC). My testimonies in those jurisdictions have addressed such topics as industry restructuring, utility mergers and acquisitions, divestiture of generation assets, siting of energy facilities, utility revenue requirements, cost of service allocations, costs of capital, rate design, revenue decoupling, incentive ratemaking, capacity planning, gas asset management, gas expansion, energy efficiency, demand-side management, contracts for non-tariff service provided to large energy users, natural gas purchasing practices, gas transportation service, natural gas processing, competitive bidding, economic development rates, load research, load forecasting, weather normalization, metering, environmental remediation costs, fuel procurement, fuel pricing issues, and hedging strategies.

Q. HAVE YOU PREVIOUSLY APPEARED BEFORE THIS COMMISSION?

A. Yes, I have appeared before this Commission in a number of prior gas and electric rate proceedings. The prior WG proceedings before this Commission in which I have testified include: Case Nos. 7649, 8060, 8119, 8191, 8545, 8819, 8920, 8959, 8991, 9104, 9158, 9267, 9322, 9433, 9449, 9481 and 9605. I have also testified before this Commission in more than 20 electric utility cases.

Q. HAVE YOU PREVIOUSLY TESTIFIED IN PROCEEDINGS IN OTHER JURISDICTIONS RELATING TO WASHINGTON GAS LIGHT COMPANY?

A. Yes, I have testified in numerous Washington Gas Light Company cases before the District of Columbia Public Service Commission ("DCPSC") and the Virginia State Corporation Commission ("VASSC"). In the District of Columbia, I have submitted testimony in Formal Case Nos. 787, 840, 845, 890, 922, 934, 989, 1016, 1054, 1079, 1093, 1115, 1137, 1142 1151, and 1162. The WG proceedings in Virginia in which I have submitted testimony include: Case Nos. PUE 830008, PUE 830029, PUE 880024, PUE 900016, PUE 910047, PUE 920041, PUE 940031, PUE 960296, PUE 980812, PUE 000584, PUE 2002-00364, PUE 2003-00603, PUE 2005-00010, PUE 2006-00059, PUE 2010-00139, PUE 2016-00001, and PUR 2018-00080.

Q. WERE THIS TESTIMONY AND ACCOMPANYING SCHEDULES PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION AND CONTROL?

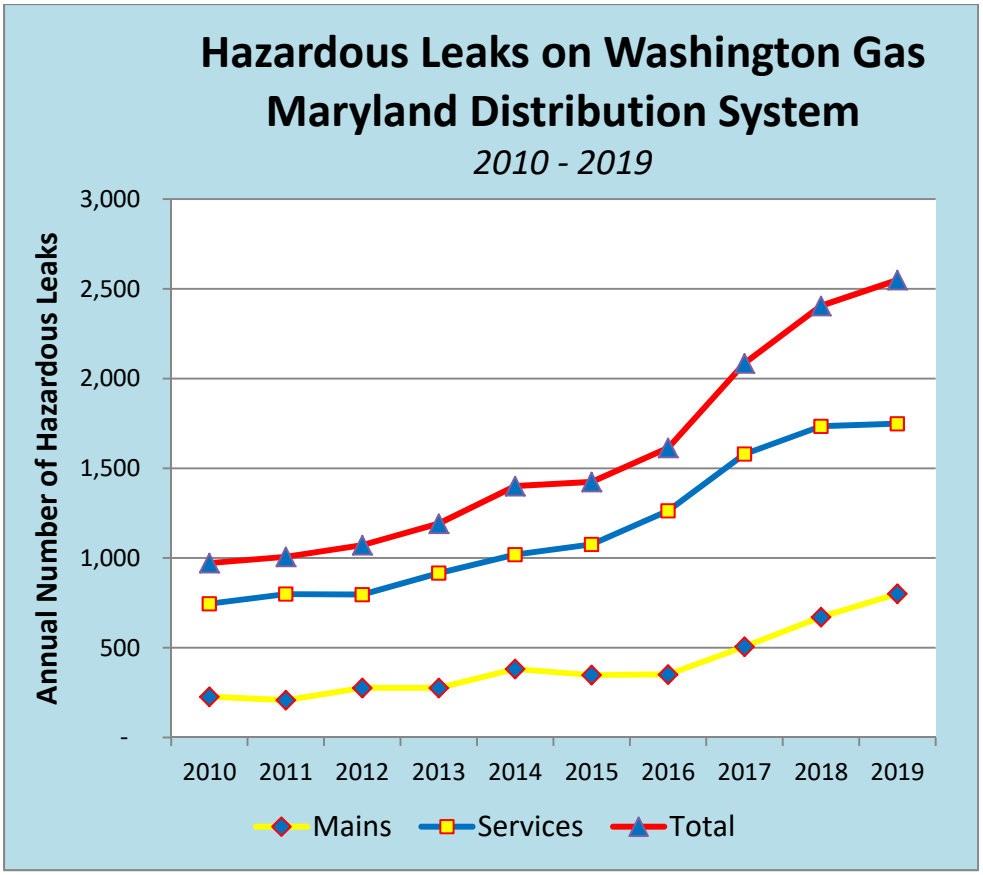
A. Yes, they were.

II. BACKGROUND

Q. WHAT IS THE CURRENT STATUS OF WASHINGTON GAS' DISTRIBUTION SYSTEM IN MARYLAND?

A. Gas system safety is a key concern to AOBA, and should be a key concern for the Commission and all parties. Yet, despite efforts to accelerate the replacement of aging and at-risk pipelines on Washington Gas' Maryland distribution system through the STRIDE program, the annual numbers of **hazardous** leaks reported on WG's Maryland distribution system have continued to rise at alarming rates.

Figure 1



The STRIDE program was intended to provide a means for the Company to replace old leak-prone pipe and reduce leaks, but it has not produced such results to date. As shown in Figure 1, total hazardous leaks on the Company's Maryland distribution system have increased from under 1,000 per year in 2010 to more than 2,500 in 2020.[1] These data suggest that over the last decade Washington Gas' distribution system in Maryland has become substantially less safe. Furthermore, the observed increases in hazardous leaks are **not** the result of actions by others. Hazardous leaks on mains and services in Washington Gas' Maryland distribution system due to third-party excavation and outside forces have **declined** noticeably since 2010. Over the five year period 2010 – 2014, Washington Gas' reported hazardous leaks attributable to third-party excavation and outside forces averaged 472 hazardous leaks per year. Over the last two years (2018-2019) the comparable average was only 343 hazardous leaks per year.

Rather, the primary cause of increased hazardous leaks on Washington Gas' Maryland distribution system was increased Pipe, Weld, or Joint failures. Hazardous leaks on **mains** in WG's Maryland distribution system attributable to Equipment, Pipe, Weld, or Joint failure increased from an average of **69 per year** for the years 2010 through 2014 to an average of **502 per year** for the years 2018 and 2019. Likewise, hazardous leaks on **services** in WG's Maryland distribution system attributed to Pipe, Weld, or Joint failure increased from an

[1] The numbers of hazardous leaks cited herein are as reported by Washington Gas to the Pipeline and Hazardous Materials Safety Administration for its Maryland distribution system for the years 2010 through 2019.

average of **259 per year** for the years 2010 through 2014 to an average of **1,048 per year** for the years 2018 and 2019.[2] These dramatic increases can only be attributed to inadequate maintenance and/or insufficient pipe replacement activity.

As part of the Merger of WGL Holdings and AltaGas, the Company committed to be "*materially more aggressive toward increasing safety going forward*."[3] The Company also committed to:

> "… *propose a specific leak mitigation process or other specific, measureable safety measures in the Washington Gas Maryland service territory, the costs of which will be $4.0 million and not recovered by Washington Gas in utility rates*."[4]

The data presented herein raise substantial concern regarding the effectiveness of the measures that Washington Gas and AltaGas have taken under their merger commitment. Yet, the Corporate Scorecard that WG Witness O'Brien sponsors (Exhibit JOB-1) provides no hint of such escalating numbers of hazardous leaks. Rather, the Company's Corporate Scorecard suggests that the Company achieved 110.3% of some unexplained and questionably relevant measure of "System Safety/Pipeline Integrity." Since Washington Gas's first STRIDE plan was approved by this Commission, the Company's numbers of hazardous leak rates, as well as its and leak management costs (a.k.a., safety response costs) for its Maryland distribution system have risen dramatically.

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2 See WG's Annual Reports to PHMSA for its Maryland distribution system for the years 2010 – 2019.
3 Case No. 9449, Order No. 88631, April 4, 2018, Appendix A, page A-8, Commitment 11B.
4 Ibid.

The Company faces similar problems with respect to significant growth in numbers of hazardous leaks in both Virginia and the District of Columbia. WG's reported hazardous leaks for each of those jurisdictions have increased roughly 130% between 2010 and 2019.

Washington Gas has stated, "*the replacement of the Company's aging infrastructures is expected to* ***eventually*** *reduce the recent* [upward] *trend*."[5] But, "eventually" is not a time period over which Maryland regulators and customers can place significant confidence. Washington Gas unquestionably lacks a well-designed, coherent, and proactive approach to controlling the growth in numbers of leaks, and particularly hazardous leaks, on its Maryland distribution system.

The Commission should also be sensitive to increases observed in Washington Gas' Unaccounted for Gas percentage which is now more than four times the industry average. The Company's comparatively high level of Unaccounted for Gas serves to increase the costs of gas service for all of its Maryland customers regardless of whether they use gas sales or delivery services. It also suggests the potential that, contrary to Maryland's efforts to reduce Greenhouse Gas emissions, the amounts of natural gas leaked into the atmosphere from the Company's distribution system are increasing. Yet, Washington Gas has made no quantitative assessment of the extent to which its elevated level of unaccounted for gas reflects the growing numbers of leaks on its system. The Company also has no specific plan for reducing the levels of unaccounted for gas it reports annually.

[5] VA SCC Case No. PUR-2018-00080, Exhibit 17, Washington Gas's response to AOBA Data Request 4-34, part b., and Tr. 132, lines 8-19.

The available statistics strongly suggest that Washington Gas does not operate a well-managed distribution system. When WG's gas distribution systems are ranked versus other major gas distribution systems in the U.S. on the basis of hazardous leaks per mile of mains, hazardous leak rates per 1,000 services, and/or percentage of Unaccounted for Gas, Washington Gas ranks among the worst in the industry in every category. Yet, despite such weak performance over the last decade, the Company seeks a dramatic increase in its authorized return on equity. This Commission must not reward poor performance with increased equity returns.

III. SUMMARY OF FINDINGS AND RECOMMENDATIONS

Q. PLEASE SUMMARIZE THE KEY FINDINGS OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The following are key findings for the issues addressed in this testimony that have been derived from my review of the Company's filing in this proceeding:

Distribution System Leaks and Safety

- Despite Washington Gas' implementation of a Strategic Infrastructure Development and Enhancement ("STRIDE") program that is intended to accelerate its replacement of aging, leak prone pipe

on its Maryland distribution system, the numbers of hazardous leaks on WG's Maryland distribution system continue to rise.

- Despite Washington Gas's purported pursuit of accelerated pipe replacements through its STRIDE plan, the miles of Cast Iron Mains and Bare and Unprotected Steel mains replaced by the Company in Maryland have **declined** in every year since 2014.

- Washington Gas's distribution system safety problems are not isolated to Maryland. Each of the jurisdictions in which Washington Gas provides retail service has similar problems with respect to rising numbers of leaks, and the Company's need to address those problems for all three of its retail service jurisdictions can be expected to place significant strain on its financial resources, as well as those of its parent company, AltaGas.

Capital Structure and Costs of Capital

- The Capital Structure recommended by Washington Gas Witness Bonawitz would place significant unnecessary additional cost burdens on the Company's Maryland ratepayers.

- In the context of the Covid-19 pandemic and historically low interest rates, WG's request for a dramatic increase in its authorized return on equity ("ROE") is unwarranted and highly inappropriate.

- Given the substantial pipe replacement requirements faced by Washington Gas in its three retail service jurisdictions and the Company's inability to publicly issue new common equity, Witness Bonawitz's representation that Washington Gas' financing decisions are made independent of its parent company, AltaGas is simply not credible.

Jurisdictional Allocation of Income Taxes

- Washington Gas' allocation of income tax responsibilities in its Jurisdictional Cost of Service Study (Exhibit ABG-3) would require the Company's Maryland ratepayers to bear a greatly disproportionate share of the Company's federal income tax expense and would require Maryland ratepayers to subsidize service provided to the Company's customers in other jurisdictions.

Inflation of Non-Labor Costs

- Substantial reasons exist for this Commission to differentiate Washington Gas from BGE in terms of the Commission's acceptance of an inflation adjustment to Non-Labor O&M costs.

Scorecard and Incentives

- WG's Corporate Scorecard does not justify the levels of short-term incentives that the Company seeks to include in rates.

- The System Safety and Pipeline Integrity performance target in the Company's Corporate Scorecard fails to address the growing numbers of hazardous leaks on WG's Maryland distribution system.

- For ratemaking purposes, the Commission should feel free to assign its own weightings to the performance targets listed in the Company's Corporate Scorecard and/or other targets that Commission finds appropriate for evaluating WG's performance.

Safety Response Costs

- Washington Gas' representations regarding Safety Response Costs excluded from rates are inaccurate and unreliable.

Normal Weather Study

- The data and analytic methods on which WG relies to develop its Normal Weather Study do not produce reliable and conceptually consistent estimates of Normal Weather gas use by rate class.

Q. WHAT RECOMMENDATIONS DO YOU OFFER TO THE COMMISSION REGARDING WG'S RATEMAKING PROPOSALS IN THIS PROCEEDING?

A. The following presents a summary of recommendations that I offer for the Commission's consideration in this proceeding. These recommendations are based on the findings discussed above and the discussion of issues and supporting analyses contained in the remainder of this testimony and the accompanying attachments and schedules.

1. The Commission should base the Company's Capital Structure for ratemaking purposes on its test year average Capital Structure with allowance for the Company's elimination of Preferred Stock.

2. The Commission should find Washington Gas' request for an increase in its authorized ROE inappropriate and unjustified. Instead it should lower WG's currently authorized ROE by at least 10 basis points.

3. The Commission should adjust the federal income tax expense that Washington Gas includes in its Maryland revenue requirement to ensure that WG's Maryland ratepayers are not required to sub-sidize the Company's service to customers in other jurisdictions.

4. The Commission should find that Washington Gas' jurisdictional cost allocations significantly overstate the amount of federal income tax expense for which Maryland ratepayers should be held responsible.

5. The Commission should reject Washington Gas' proposed inflation adjustment to its Non-Labor O&M Expenses.

6. The Commission should approve an overall revenue request for Washington Gas in this proceeding of not more than $8.6 million including the roll-in of STRIDE costs.

7. The Commission should find Washington Gas' operation of its Maryland distribution system sub-standard and inconsistent with the provision of safe and affordable service for Maryland rate-payers.

8. The Commission should require Washington Gas to remove from rates at least 45% of its Short-Term Incentive ("STI") compensation.

9. The Commission should re-evaluate the manner in which the Company is using its STRIDE program as well as the criteria on which WG measures safety improvements. The Commission should also establish a separate proceeding to investigate the use of financial incentives to achieve more substantial reductions in hazardous leaks on the Company's Maryland distribution system.

IV. DISCUSSION OF ISSUES

Q. HOW IS YOUR DISCUSSION OF ISSUES RELATING TO WG'S DIRECT TESTIMONY AND SCHEDULES IN THIS PROCEEDING ORGANIZED?

A. The discussion of issues in this testimony is presented in two sections.

Section A further develops AOBA's concerns regarding Washington Gas' operation and maintenance of its Maryland distribution system.

Section B addresses selected revenue requirements related issues. This section focuses on: (1) WG's proposed Capital Structure and overall Costs of Capital; (2) the Company's allocation of income tax expense to its Maryland customers; (3) Washington Gas' request for this Commission's recognition of an inflation adjustment to its Non-Labor O&M costs; and (4) WG's Corporate Scorecard and incentive compensation. Section B also presents AOBA's initial overall revenue requirement for Washington Gas in this proceeding.

Section C addresses other matters of concern to AOBA, including: (1) the Company's representations regarding Safety Response costs excluded from rates; and (2) the questionable nature of the analyses underlying the Normal Weather Study that is presented by WG Witness Gibson.

A. Distribution System Leaks and Safety

Q. DOES WASHINGTON GAS' APPLICATION AND SUPPORTING TESTIMONY ADEQUATELY ADDRESS THE COMPANY'S CONTINUING UPWARD TREND IN THE NUMBER OF LEAKS ON ITS MARLAND DISTRIBUTION SYSTEM?

A. No. The rising numbers of leaks, and particularly **hazardous** leaks, on WG's distribution system in Maryland should be a key focus of the Company's management. However, leak trends and their associated impacts on the safety and costs of WG's distribution system operations in Maryland are not explicitly addressed by any of WG's witnesses in this proceeding. Although increases in the annual numbers of hazardous leaks have added significantly to the

Company's operating and capital costs in recent years, Washington Gas offers no clear plan for either: (a) assured reduction of annual numbers of hazardous leaks on its Maryland distribution system; or (b) better control of its Leak Management costs (i.e., costs which the Company now labels "Safety Response Costs"). Instead, Washington Gas appears to have adopted a primarily reactive, rather than proactive, approach to dealing with increasing numbers of hazardous leaks, and that approach appears to foster further erosion of the safety of its Maryland distribution system and further increases in its leak management costs.

Q. HAS THE COMPANY PREVIOUSLY PROVIDED INFORMATION REGARDING THE LEAK TREND TO WHICH WITNESS O'BRIEN REFERS IN HIS DIRECT TESTIMONY?

A. Yes. The Company is well aware of the increasing numbers of leaks on its distribution mains and services. For example, in Case No. 9481 Washington Gas Witness Price presented a graph showing a continuing upward trend in the number of leaks on the Company's distribution system.[6] According to that presentation, the total annual number of leaks on the Company's distribution system increased from approximately 4,000 in 2013 to more than 12,000 for 2018. In other words, the number of leaks on the Washington Gas distribution system has **more than tripled** in five years. However, since Case No. 9481 further significant increases in leaks on the Company's Maryland distribution system have been experienced. Between 2017 and 2018 the reported number of

[6] Case No. 9481, the Direct Testimony of Witness Price, page 10, lines 11-20.

total leaks on Washington Gas's Maryland system rose from 5,614 to **7,359**, a 31% increase in one year.

In Case No. 9605 and again in this case, WG Witness O'Brien has **confirmed** "*the leak trend that continues to impact the Company's distribution operations*."[7] However, in neither this case nor Case No. 9605 has Witness O'Brien's Direct Testimony offered any further discussion of leak management issues or WG's approach to reversing the significant upward trend in hazardous leaks on its Maryland distribution system. Moreover, his testimonies provide no reference to any other WG witness who addresses such matters from an operational perspective. The Company's only effort to address these matters was a ratemaking proposal in Case No. 9605 that would allow Washington Gas to "automatically adjust base rates" to recover incremental costs incurred to address identified leaks on a **reactive** basis. That mechanism, the Company's proposed Safety Response Tracker ("SRT"), constituted little more than a re-package and re-labeling of leak management costs discussed in prior proceedings.[8] Moreover, in the period since the implementation of new rates from Case No. 9605, Washington Gas has actually over-collected its reported actual leak management (a.k.a., Safety Response) costs.[9]

[7] Case No. 9605, the Direct Testimony of Witness O'Brien, page 3, lines 15-16; and the Direct Testimony of Witness O'Brien in this case (Case No. 9651), page 3, lines 17-18.
[8] It should be noted that Washington Gas settled Case No. 9605 without a SRT Rider.
[9] For further discussion of this matter see Section IV.C.1. of this testimony.

Q. HAS WASHINGTON GAS ADDRESSED THE RISING NUMBER OF LEAKS ON ITS DISTRIBUTION SYSTEM THROUGH THE STRATEGIC INFRASTRUCTURE DEVELOPMENT AND ENHANCEMENT ("STRIDE") PROGRAM?

A. Although the STRIDE program was intended to provide for accelerated gas company infrastructure improvements,[10] Washington Gas has failed to sustain an increased level of pipe replacement activity. Witness O'Brien testified in Case No. 9481 that in calendar year 2018 the Company replaced 9.25 miles of mains in Maryland. However, that marked a noticeable decline from the miles of main replacements achieved by the Washington Gas in Maryland in 2016 and 2017. In fact, more recent data obtained through the Company's annual reports to the Pipeline and Hazardous Materials Safety Administration suggest that the miles of Cast Iron, Bare Steel, and Unprotected Steel mains replaced by the Company have **declined** every year since 2014. See **Exhibit BRO-1**. Apparently, Washington Gas has used the STRIDE program primarily as a mechanism for accelerated cost recovery without any discernible acceleration of the amount of pipe replaced.

Q. DOES WASHINGTON GAS FACE SIMILAR LEAK PROBLEMS IN VIRGINIA AND THE DISTRICT OF COLUMBIA?

A. Yes. **Exhibit BRO-2** indicates that Washington Gas has experienced substantial growth in the annual number of reported **hazardous** leaks in each of its retail service jurisdictions. Although WG's annual numbers of hazardous leaks

[10] Section 4-210 of the Public Utilities Article, Maryland Annotated Code. MD PSC approved WG's initial STRIDE plan on May 6, 2014, Case No. 9335, Order No. 86321.

continue to be highest in Maryland, all three jurisdictions have experienced dramatic increases in the reported leaks (i.e., over a 330% increase in Virginia since 2013 and nearly a 150% increase over the last five years in the District of Columbia).

Q. HOW SEVERE ARE THE LEAK PROBLEMS THAT WASHINGTON GAS HAS ENCOUNTERED?

A. Twice in the last three years Washington Gas has found the need to declare a "***catastrophic incident***"[11] and utilize "Mutual Aid" provided by other utilities to address spikes in the numbers of leaks on its system. When such a "***catastrophic incident***"[12] is declared, Washington Gas, under the terms of its union contract with the International Brotherhood of Teamsters, Local 96, is required to pay **double time** to its union employees who are required to work an extended day during such an emergency declaration. Those added costs are in addition to incremental costs the Company must pay for "Mutual Aid" resources, and thereby, further magnify the resulting increases in the Company's leak management (a.k.a., Safety Response) costs.

[11] Annex EF to the Company's current Labor Contract with the International Brotherhood of Teamsters, Local 96, defines a "catastrophic incident" as: *"… any incident resulting in cessation or significant interruption of operations at one or more Company facilities or an incident resulting in the activation of 'mutual aid*.'" On or about February 14, 2019 Washington Gas activated "*mutual aid*" for the second time in the last two years.

[12] See, for example, Washington Gas' June 26, 2019 supplemental response to OPC Data Request 8-2 in Case No. 9605 which indicated that an increase in Grade 1 leaks caused a spike in the Company's Grade 2 leak backlog and that resulted in the Company declaring a "***catastrophic incident***"[12] on or about February 14, 2019.

Q. HAVE THE COMPANY'S GROWING LEAK RATES IMPACTED OTHER ASPECTS OF ITS OPERATIONS?

A. Yes. A comparison of Washington Gas' Unaccounted for Gas percentage has risen with increases in the numbers of leaks on its system. Data submitted to the Pipeline and Hazardous Materials Safety Administration ("PHMSA") by gas distribution systems for last three years (i.e., 2016 – 2019) indicate that WG's Unaccounted for Gas percentage has increased from 3.38% to 4.30%.[13] Moreover, workpapers provided by Washington Gas in its currently pending base rate case in the District of Columbia (i.e., DC PSC Formal Case No. 1162) reflect an Unaccounted for Gas rate for the twelve months ended August 2019 of **4.42%**. That is highest level reported for any annual period over the last decade. It is also more than four times the 2019 average Unaccounted for Gas percentage for all large gas distribution systems in the U.S. which was 1.03%.

Washington Gas has argued that its Unaccounted for Gas percentage is a function of a number of factors including: (1) metering errors; (2) changes in heating value of gas delivered to the Company's system; (3) data quality issues; (4) theft of service; and (5) third-party excavation damage. However, the Company offer no reason why those factors would account for significantly greater losses of gas for WG than for other gas distribution utilities. Furthermore, the Company has undertaken no analysis to quantify gas losses attributable to those factors. However, PHMSA data indicate that Washington Gas' distribution system has experienced one of the largest increases in distribution system leaks

[13] Washington Gas only computes its Unaccounted for Gas percentage for PHMSA on a system-wide basis, and it reports the same percentage for DC, MD, and VA.

in the industry. In that context, it is difficult to perceive that the Company's rising Unaccounted for Gas percentage is unrelated to the growing numbers of leaks on its system.

This Commission should also be sensitive to the fact that rising leak rates and unaccounted for gas percentages are inconsistent with Maryland's efforts to reduce Greenhouse Gas ("GHG") emissions. Washington Gas suggests its pipe replacement activities are reducing GHG emissions, but there is no evidence that the limited amounts of pipe replaced by Washington Gas have offset the emissions from the growing numbers of leaks from the Company's facilities.

B. Revenue Requirements

1. Capital Structure and Cost of Capital

Q. WHAT IS THE CAPITAL STRUCTURE THAT WASHINGTON GAS PROPOSES TO USE FOR RATEMAKING PURPOSES IN THIS PROCEEDING?

A. Through the Direct Testimony of Witness Bonawitz, Washington Gas proposes a capital structure that comprises the following:

Table 1

Washington Gas Recommended Capital Structure

Long-Term Debt	$1,318,356,000	41.75%
Short-Term Debt	$ 116,757,000	3.70%
Common Equity	$1,722,656,000	**54.55**%
Total	$3,157,769,000	100.00%

Q. HOW DOES THE COMPANY'S PROPOSED CAPITAL STRUCTURE COMPARE WITH ITS AVERAGE ACTUAL CAPITAL STRUCTURE FOR THE TEST YEAR?

A. As presented in Witness Bonawitz's Direct Testimony, Washington Gas' average capital structure for the test year was as shown below:

Table 2

Washington Gas Test Year Average Capital Structure

Long-Term Debt	$1,268,959,000	40.19%
Short-Term Debt	$ 245,817,000	7.78%
Preferred Stock	$ 14,087,000	0.45%
Common Equity	$1,628,906,000	**51.58**%
Total	$3,157,769,000	100.00%

Q. IN THE COMPANY'S CURRENTLY PENDING BASE RATE CASE BEFORE THE DISTRICT OF COLUMBIA PUBLIC SERVICE COMMISSION, FORMAL

CASE NO. 1162, DID WASHINGTON GAS REQUEST APPROVAL OF A CAPITAL STRUCTURE WITH OVER 54% COMMON EQUITY?

A. No. The Capital Structure recommended by Witness Bonawitz in his Direct Testimony in that case was as follows:

Table 3

Bonawitz Recommended Capital Structure for WG
DC PSC Formal Case No. 1162 – Direct Testimony

Long-Term Debt	$1,319,015,000	43.31%
Short-Term Debt	$ 135,683,000	4.45%
Preferred Stock	$ 0	0.00%
Common Equity	$1,590,962,000	**52.24**%
Total	$3,045,660,000	100.00%

As shown in Table 3, Witness Bonawitz's initial recommendation in that case recommended a capital structure with 52.24% common equity. In Supplemental Direct Testimony subsequently filed in that case, Witness Bonawitz revised his recommended common equity percentage downward slightly to 52.10%. See Table 4.

Table 4

Bonawitz Recommended Capital Structure for WG
DC PSC Formal Case No. 1162 – Supplemental Direct Testimony

Long-Term Debt	$1,320,405,000	43.21%
Short-Term Debt	$ 143,218,000	4.69%
Preferred Stock	$ 0	0.00%
Common Equity	$1,592,113,000	**52.10**%
Total	$3,055,736,000	100.00%

Q. THE TABLE PRESENTED AT PAGE 10, LINES 1-7, OF WITNESS BONAWITZ DIRECT TESTIMONY IDENTIFIES THE "PERMANENT CAPITAL" CHANGES THAT THE COMPANY INCLUDES IN ITS RECOMMENDED CAPITAL STRUCTURE. DO YOU HAVE ANY COMMENTS REGARDING THE CONTENT OF THAT TABLE?

A. I do. The most substantial change shown is a **$129 million reduction** in the Company's average use of **Short-Term Debt**. However, that should not be considered a "***permanent***" change in the Company's capital structure. As Witness Bonawitz states, "*The amount of short-term debt outstanding varies significantly by year, by month and within a month as well*." Washington Gas has offered no evidence that it can be expected to maintain a significantly lower average use of Short-Term Debt in the rate effective period than it did during the Company's historic test year. Witness Bonawitz has also offered no evidence that that maintenance of the level of short-term debt comparable to that used by

the Company on average during the test year would either: (1) adversely impact ratepayers; or (2) significantly impede the Company's ability to access capital markets.[14]

Witness Bonawitz's capital structure recommendation in this case, however, would add significantly to ratepayer costs as his proposals would offset his recommended decreases in comparatively low-cost Short-Term Debt with a $93.75 million increases in the Company's Common Equity and a $49.4 million increase in WG's Long-Term Debt. At a time when interest rates are at historically low levels, WG's proposed substitution of Common Equity at a 10.45% ROE and an effective pre-tax cost of 14.74% is quite costly for WG's Maryland ratepayers. Even replacement of a portion of the Company's Short-term debt with Long-Term Debt adds noticeably to the Company's overall costs of capital.

Q. HOW DOES THE DIFFERENCE BETWEEN THE COMPANY'S AVERAGE CAPITAL STRUCTURE FOR THE TEST YEAR AND ITS PROPOSED CAPITAL STRUCTURE FOR RATEMAKING PURPOSES IN THIS PROCEEDING IMPACT COSTS FOR MARYLAND RATEPAYERS?

A. Accepting for discussion purposes WG's proposed cost rates for Short-Term Debt, Long-Term Debt and Common Equity, **Exhibit BRO-3** compares the Company's overall costs of capital using: (a) Witness Bonawitz's recommended capital structure; and (b) the Company's Average Test Year Capital Structure.

[14] It must be remembered that, as a wholly-owned subsidiary of AltaGas, Washington Gas no longer issues public traded common equity, and therefore, references by WG to accessing capital markets effectively address only markets for long-term and short-term debt.

The results of that comparison indicate that Washington Gas' recommended capital structure **adds $4.9 million** to the Company's requested revenue increase in this proceeding.

In this context, I note that Washington Gas has offered no suggestion that the capital structure it maintained on average during the test year was inappropriate or unworkable in terms of its ability to maintain the Company's access to capital markets. However, the higher level of short-term debt used by the Company during the test year, if maintained going forward, may limit the Company's ability to improve its achieved ROE for the rate effective period by substituting low cost short-term debt for incremental equity infusions. As the percentage of common equity in the Company's approved capital structure for ratemaking purposes increases, its ability to improve its profitability by substituting short-term debt for common equity (subject to the Company's merger commitment not to go below 48% common equity) also increases. In other words, if rates are set based on an unnecessarily high common equity percentage, Washington Gas and its sole shareholder, AltaGas, could benefit at the expense of WG's Maryland ratepayers.

Q. DOES WASHINGTON GAS OFFER ANY JUSTIFICATION FOR THE SIGNIFICANT INCREASE IN ITS CAPITAL COSTS AND REVENUE REQUIREMENTS THAT RESULTS FROM THE DIFFERENCE BETWEEN ITS AVERAGE TEST YEAR CAPITAL STRUCTURE AND ITS RECOMMENDED CAPITAL STRUCTURE IN THIS PROCEEDING?

A. No. The Company's presentation in this proceeding is devoid of any justification for the higher costs that result from its recommended capital structure. The only rationale offered by Washington Gas Witness Bonawitz asserts that the Company's recommended capital structure is "… *based solely on its need to fund the utility's operations at* ***reasonable cost*** *and maintain* ***efficient access*** *to the capital markets*…"[15] However, Witness Bonawitz does not identify or explain the criteria he uses to assess the reasonableness of the resulting ratepayer costs. He also does not provide the data and analyses on which he relies to assess the impacts of his proposed capital structure on ratepayer costs. Furthermore, Witness Bonawitz testimony includes no assessment of the impacts of his recommended capital structure on the Company's access to capital markets and no measures of the comparative efficiency of the Company's access to capital markets under his proposals.

Q. HAS THE COMPANY DEMONSTRATED THAT THERE ARE RATEPAYER BENEFITS THAT CAN BE ASSOCIATED WITH THE CAPITAL STRUCTURE CHANGES THAT IT PROPOSES IN THIS PROCEEDING?

A. No. The Company has failed to show that there would be any ratepayer benefits to offset the increased costs associated with acceptance of its recommended capital structure.

[15] Washington Gas Exhibit (DIB), the Direct Testimony of Witness Bonawitz, page 5, lines 10-14.

Q. SHOULD THE COMMISSION ACCEPT WITNESS BONAWITZ'S REPRESENTATION THAT WASHINGTON GAS' CAPITAL PLANNING AND FINANCING DECISIONS ARE MADE INDEPENDENT OF ITS PARENT COMPANY?

A. No. Maintenance of the safety of the Company's operations will necessitate substantial additional capital to replace increased amounts of pipe on an accelerated basis in each of its retail service jurisdictions. Funding those investments in the context of the Company's merger commitment to maintain its equity percentage between 48% and 55% will, in turn, require Washington Gas to add substantial amounts equity capital. However, as this Commission is well aware, Washington Gas is no longer in a position in which it can market common equity. Rather, Washington Gas is dependent upon its parent, AltaGas, for equity infusions. As a result of that relationship, Washington Gas' financial planning and capital structure are constrained by AltaGas' ability to raise capital. Since the merger, AltaGas has provided equity infusions for Washington Gas primarily through proceeds from asset sales. However, while Washington Gas' capital needs for pipe replacement continue to grow, AltaGas' ability to obtain funds through asset sales is declining.

Q. DOES THE COMPANY'S MERGER COMMITMENT TO MAINTAIN ITS COMMON EQUITY RATIO BETWEEN 48% AND 55% NECESSITATE A FINDING THAT ANY COMMON EQUITY RATIO WITHIN THAT RANGE WILL PRODUCE A REASONABLE COST OF CAPITAL FOR WG'S MARYLAND RATEPAYERS?

A. No, it does not. Nothing in the Company's merger commitments specifies that the Commission must accept for ratemaking purposes any equity percentage that the Company may choose to propose within the 48% to 55% range. Nor does Washington Gas' merger commitment necessitate a finding that any common equity percentage within the specified 48% to 55% range will yield reasonable ratepayer costs. Rather, as previously noted, **Exhibit BRO-3**, demonstrates that the difference between the Company's recommended 54.55% common equity percentage and a roughly 52% common equity percentage increases Washington Gas' annual revenue requirement by more than **$4.9 million** (accepting ***arguendo*** the Company's cost rates for debt and equity). Furthermore, Washington Gas has demonstrated through its own actions over the last several years that Commission determinations regarding the capital structure used for ratemaking purposes does not constrain the Company's ability to vary its actual capital structure within the 48% to 55% range during the rate effective period.

Q. SHOULD THE COMMISSION ACCEPT THE COST RATES FOR DEBT AND EQUITY THAT WASHINGTON GAS PROPOSES?

A. This testimony does not challenge the Company's proposed cost rates for long-term debt and short-term debt. However, the 10.45% ROE that Washington Gas asks this Commission to approve is inappropriate, unjustified, and clearly excessive. It also ignores this Commission's prior determinations with respect to its exercise of gradualism in the adjustment of utility ROEs. As this Commission stated in Case No. 9418:

> As we said in Case No. 9418, relative stability in rates is an important ratemaking goal – for ratepayers and utilities alike.[402] Gradualism prescribes that sudden and dramatic shifts in rate design should be avoided. We look to authorize ROEs that change gradually, instead of attempting to respond immediately to intermediate market changes. A five-basis point downward adjustment from Pepco's currently approved ROE comports with the principle of gradualism. This slight movement in one year's time maintains an environment that does not surprise investors with changes that impact them adversely.[16]

Given the economic uncertainties associated with the Covid-19 pandemic, considerations regarding the need for stability in rates and utility rates of return should not be ignored. However, where this Commission found in Order No. 88432 that a five basis point adjustment per year was an appropriate reflection of gradualism considerations, Washington Gas in this proceeding seeks a 75 basis point increase in its authorized ROE. Yet, any increase in the Company's ROE in this proceeding is difficult to rationalize when considered in the context of current financial market conditions, historically low interest rates, and the on-going Covid-19 pandemic impacts on Maryland residents and businesses. For these reasons, a gradual adjustment of Washington Gas' current 9.70% authorized ROE would yield an approved ROE for Washington Gas in this proceeding not greater than 9.60%.

However, if this Commission no longer finds adherence to gradualism in the adjustment of utility ROEs necessary, then the Commission should move the Company's Maryland authorized ROEs closer to those most recently found appropriate for Washington Gas in the District of Columbia and Virginia (i.e.,

[16] Order No. 88432 at 101.

9.25% and 9.20% respectively). From AOBA's perspective, such a determination would still reflect a measure of gradualism given that the cost of equity analyses presented by AOBA Witness Timothy Oliver indicate that a DCF market-based cost of equity for Washington Gas is in the range of 8.50% to 9.20%.

Q. HOW WOULD AOBA'S CAPITAL STRUCTURE AND ROE RECOMMENDATIONS IMPACT THE COMPANY'S REQUESTED REVENUE INCREASE IN THIS PROCEEDING?

A. If this Commission applies its prior precedent of five basis points per year, then WG's current authorized ROE should be adjusted downward by 10 basis points to **9.60%** (i.e., five basis points per year for each year of the two-year period since the Commission last ROE determination for Washington Gas). On the other hand, if strict adherence to that past determination is no longer judged by the Commission to be necessary or appropriate, then the Company's authorized ROE should be lowered to not more than **9.25%**.

Using the Company's average test year Capital Structure,[17] a 9.60% ROE and WG's proposed cost rates for long-term and short-term debt, would reduce WG's revenue increase request in this proceeding by **$12.1 million**. See **Exhibit BRO-4**, page 1 of 2. Alternatively, if the Company's authorized ROE is lowered

[17] AOBA does not contest the Company's proposal to eliminate Preferred Stock from its ratemaking capital structure. Moreover, for computation of an overall rate of return for the Company and assessment of revenue requirements impacts, Exhibit BRO-4 assumes that the Company's current dollar amount of Preferred Stock would be replaced with an equal amount of Common Equity. However, considering that the Company's previously approved cost rate for Preferred Stock (i.e., 4.79%) aligns closely with its proposed costs of Long-Term Debt in this proceeding (i.e., 4.69%), replacement of the Company's dollar amount of Preferred Stock with an equal amount of Long-Term Debt would serve to minimize the rate impacts of removing Preferred Stock from the Company's capital structure.

to 9.25%, then WG's requested $28.4 revenue increase would be lowered by **$15.2 million**. See **Exhibit BRO-4**, page 2 of 2**.**

Q. WITNESS BONAWITZ TESTIFIES THAT MAINTAINING STRONG DEBT RATINGS IS CRITICAL TO ENSURE A REASONABLE COST OF DEBT. DO YOU AGREE?

A. It is widely understood that the costs of debt increase as a company's debt ratings decline, but Witness Bonawitz focus on debt ratings misses more important concerns. As illustrated in the tables in this section of my testimony, the Company's cost of equity capital far exceeds its cost of debt. He also fails to address the fact that an increase in the Company's authorized cost of equity (i.e., ROE) effects the returns provided for all of the equity included in the Company's capital structure, but an increase in the Company's cost of debt only affects the costs of new debt issuances. As a result, even a comparatively large increase in the Company's debt costs would have considerably less impact on WG's revenue requirement than a WG's requested increase in its authorized ROE in this proceeding. His concerns regarding further erosion of the Company debt ratings are also muted by the common equity percentage limits specified in WG's merger commitments. From AOBA's perspective, the lower bound of 48% for the Company's common equity percentage was included specifically to reduce the potential for unacceptable degradation of WG's debt ratings.

2. Jurisdictional Allocation of Income Taxes

Q. HAS WASHINGTON GAS PRESENTED A JURISDICTIONAL COST ALLOCATION STUDY IN THIS PROCEEDING?

A. Yes. That study is presented by Washington Gas Witness Gibson as Exhibit ABG-3 attached to his Direct Testimony. He also provides Exhibit ABG-2 which describes the allocation procedures used to develop the Company's jurisdictional cost allocations.

Q. HAVE YOU REVIEWED THE CONTENT OF EXHIBITS ABG-2 AND ABG-3?

A. I have. I have also compared those studies with similar jurisdictional cost allocation studies provided by the Company in prior proceedings.

Q. WHAT ARE THE RESULTS OF WASHINGTON GAS' ALLOCATION OF FEDERAL INCOME TAXES AMONG JURISDICTIONS IN EXHIBIT ABG-3?

A. Exhibit ABG-3, Schedule SM, page 1 of 2, shows the following allocation of federal income tax responsibilities by jurisdiction:

Table 5

Washington Gas Jurisdictional Allocation of Federal Income Tax Responsibilities

	Allocated Federal Income Tax	Percent of Total
Maryland	$ 10,273,135	85.0%
District of Columbia	$ (424,121)	-3.5%
Virginia	$ 2,023,019	16.7%
FERC	$ 213,045	1.8%
Total	$ 12,085,078	100.0%

As shown in Table 5, above, Washington Gas' Jurisdictional Cost Allocations result in **85.0%** of the Company's total federal income expense being placed on its **Maryland** customers. However, Table 6 shows that Maryland is only allocated **38.7%** of WG's overall net rate base investment[18] and only 39.35% of the Company's average number of meters.[19]

Table 6
Washington Gas Jurisdictional Allocation of Net Rate Base

	Net Rate Base	Percent of Total
Maryland	$ 1,205,241,275	38.7%
District of Columbia	$ 551,402,084	17.7%
Virginia	$ 1,347,357,159	43.3%
FERC	$ 37,450	0.3%
Total	$ 3.113,649,376	100.0%

[18] Exhibit ABG-3, Schedule AL, page 3 of 5, line 6, column I
[19] Exhibit ABG-3, Schedule AL, page 4 of 5, line 11, column I.

In other words, the percentage of WG's Federal Income Taxes allocated to Maryland is more than double the percentage of the Company's overall net rate base costs that are attributed to Maryland.

Q. HOW DOES THE COMPANY'S COMPUTED "EFFECTIVE" TAX RATE FOR MARYLAND COMPARE WITH ITS EFFECTIVE TAX RATES FOR ITS OTHER RETAIL SERVICE JURISDICTIONS?

A. Table 7, below, shows the effective tax rates by jurisdiction that Washington Gas computes in Exhibit ABG-3, Schedule SM, page 2 of 2.

Table 7
Washington Gas Effective Tax Rates
By Jurisdiction

	Effective Tax Rate
Maryland	**19.66%**
District of Columbia	**-10.92%**
Virginia	3.84%
WG Overall	10.95%

As can be observed in Table 7, the Company's computed effective tax rates by jurisdiction vary widely. The effective tax rate for Maryland is 19.66% while the overall effective tax rate for the Company is 10.95%. Both Virginia and the District of Columbia are shown to have effective income tax rates that are significantly below the Company's overall effective tax rate. The effective tax rate computed for WG's Virginia jurisdictional service is only 3.84% or less than

one-fifth the effective rate for Maryland, and the effective tax rate shown for the District of Columbia is substantially **negative**.

Q. HAVE WG'S COMPUTED EFFECTIVE TAX RATES BY JURISDICTION DISPLAYED SUCH WIDE VARIATION IN PRIOR PROCEEDINGS?

A. No. Although the Company's computed "effective" tax rates have not been uniform across its retail service jurisdictions in prior rate filings, the extent of variation from the effective overall tax rate for WG has never been as large as the variation shown in this proceeding.

Table 8
Washington Gas Effective Tax Rates
By Jurisdiction in Other Recent WG Rate Filings

Case	**MD 9481**	**MD 9605**	**DC 1162**	**MD 9651**
	Suppl	*Direct*	*Suppl*	*Direct*
Test Period	*3/31/2018*	*3/31/2019*	*12/31/2019*	*3/31/2020*
Maryland	22.18%	1.11%	15.49%	**19.99%**
District of Columbia	19.39%	0.82%	6.81%	**-10.92%**
Virginia	19.49%	7.87%	8.66%	3.84%
WG Overall	20.53%	4.57%	11.60%	10.95%

Q. SHOULD THIS COMMISSION ACCEPT THE JURISDICTIONAL COST ALLOCATIONS IN EXHIBIT ABG-3 AS PRESENTED?

A. No. The Company's jurisdictional allocation of Federal Income Tax expenses essentially requires Maryland ratepayers bear a greatly disproportionate share of the Company's federal income tax expense. Exhibit ABG-3, Schedule SM (Summary), page 1 of 2, line 16, indicates that the Company has allocated $10,273,135 of federal income tax expense to its Maryland jurisdictional

customers out of a total company-wide federal income tax expense of $12,085,078. In other words, Washington Gas' allocations impose **85%** of its test year income tax expense on its Maryland ratepayers. That allocation is neither reasonable nor appropriate.

Q. WHAT CAUSES THE OBSERVED DISPARITY IN EFFECTIVE INCOME TAX RATES BY JURISDICTION IN EXHIBIT ABG-3?

A. There appear to be two major contributing factors. The first is a disparity in the computed returns earned by jurisdiction. The second relates to the Company's ratemaking treatments of TCJA impacts in the various jurisdictions. It is incumbent on the Commission to ensure that the treatments of TCJA impacts in other jurisdictions do not adversely impact Maryland customers. In the absence of evidence that WG's Maryland customers are adversely affected by TCJA treatments in other jurisdictions, the Commission's focus should be on the Company's allocation of its embedded (test year) federal income tax expense. However, when the Company's assessment of taxable income is examined, we find that those taxable income determinations are not reflective of levelized equity returns across jurisdictions.

Q. HOW DO THE COMPANY'S COMPUTED EARNED RATES OF RETURN BY JURISDICTION VARY?

A. Table 9 shows the Company's computed rate of return for its District of Columbia service is substantially below its computed overall rate of return and even further

below the rates of return achieved by Washington Gas on its Maryland and Virginia operations. As a result, the measure of taxable income on which Washington Gas computes test year federal income tax responsibilities presumes that Maryland ratepayers, who provide a noticeably above average rate of return for the Company must subsidize the return requirements and associated federal income tax responsibilities for Washington Gas' District of Columbia service.

Table 9
Washington Gas Calculated Rates of Return
By Retail Service Jurisdiction

	Earned Rate of Return
Maryland	6.63%
District of Columbia	3.52%
Virginia	6.68%
WG Overall	6.11%[20]

Q. HOW SHOULD THE COMMISSION ADDRESS DIFFERENCE IN RATES OF RETURN AND DIFFERENCES IN EFFECTIVE TAX RATES BY JURISDICTION WHIEN DETERMINING WG'S REVENUE REQUIREMENT FOR THIS PROCEEDING?

A. Any increase in federal income tax responsibility associated with a revenue increase approved by the Commission is computed at the Company's marginal tax rates, and I have no problem with the manner in which Washington Gas has

[20] The Company overall ROR includes a ROR of 8.31% on its FERC service, but WG's net rate base for FERC jurisdictional service represents only 0.3% of its overall net rate base, and thereby, the Company's FERC jurisdiction operations have very little influence on WG's overall earnings.

performed such calculations in its filing in this proceeding. However, a problem exists in the determination of each jurisdiction's responsibility for the Company's embedded test year federal income tax expense. For test year income tax responsibilities to be determined in an equitable manner across jurisdictions, the Company's test year revenues must be adjusted for each jurisdiction to reflect the Company's overall average rate of return. If each jurisdiction's taxable income is adjusted in that manner, Maryland's share of WG's test year federal income tax expense would be reduced by approximately **$5.6 million**. In other words, Maryland's share of WG's test year federal income tax expense would be reduced from $10,273,135 to **$4,677,930**. See **Exhibit BRO-5**.

3. Inflation of Non-Labor O&M Costs

Q. DOES WASHINGTON GAS PROPOSE TO ADJUST ITS TEST YEAR NON-LABOR O&M EXPENSES FOR THE EFFECTS OF INFLATION?

A. Yes. The Company's Adjustment 21, as presented in the Direct Testimony of Witness Tuoriniemi requests the Commission's recognition of a **$907,643** upward adjustment to the Non-Labor component of its Distribution O&M expense to address the Company's estimate of the potential effects of inflation on those costs in the Rate Effective Period. The estimate of inflation impacts that WG offers is based on an application of the "CPI-U" (i.e., the Consumer Price Index for Urban Consumers) for Washington-Alexandria-Arlington.

Q. HAS WASHINGTON GAS SOUGHT RECOGNITION OF A SIMILAR INFLATION ADJUSTMENT TO IT NON-LABOR DISTRIBUTION O&M EXPENSES IN OTHER RECENT PROCEEDINGS?

A. No. A review of the Company's last five base rate cases before this Commission (i.e., Case Nos. 9104, 9267, 9322, 9481, 9605) does not find a single instance where the Company requested an inflation adjustment to its Non-Labor Distribution O&M expense.

Q. IS WASHINGTON GAS' PROPOSAL TO ADJUST ITS NON-LABOR DISTRIBUTION EXPENSES FOR INFLATION REASONABLE AND APPROPRIATE?

A. No, it is not. The Company has failed to show that inflation is a major driver of changes in its Non-Labor Distribution O&M expenditures. There are many **non-inflation-related** factors that influence the levels of WG's Non-Labor Distribution expenses over time, and Washington Gas has failed to systematically address those factors and the influence they can be expected to have on the Company's Non-Labor Distribution expenses going forward in time.

Importantly, the Company's Non-Labor Distribution O&M expenses will be affected by: (1) changes in the mix of goods and services it purchases from year-to-year; (2) changes in technology, particularly as it enables the Company to substitute capital for labor; and (3) changes in the Company's sourcing decisions. For example, software and communication systems have evolved over time to become major elements of the Company's Non-Labor distribution expenses. However, the number and types of software and communications systems

employed by the Company, as well as the sources from which Washington Gas has chosen to purchase such systems and services can change overtime. Costs for IT and software previously incurred directly by Washington Gas to support its distribution operations may now be obtained through one or more outsourced providers of equipment and services. In addition, other costs previously incurred directly by the Company and booked in the Company's operating expense accounts may now be provided by a parent company (e.g., AltaGas Utilities U.S. or AltaGas Ltd.) or other affiliated entity and booked in Account 923 as part of Outside Services.

Q. DOES WASHINGTON GAS OFFER ANY EVIDENCE THAT ITS NON-LABOR O&M EXPENSES HAVE INCREASED IN PROPORTION TO CHANGES IN THE CONSUMER PRICE INDEX IN THE PAST?

A. No, it has not. To the contrary, through its Business Process Outsourcing (BPO 2.0) activities, Washington Gas claims to have achieved significant reductions in significant elements of its Non-Labor Costs. For example, the Company represented that its BPO 2.0 contracts would produce a total of $44.8 million of cost savings of which $34.9 million was attributed to IT functions. Those savings in the costs of outsourced services are part of the Non-Labor Costs for which Washington Gas' now seeks a broadly applied inflation adjustment. To the extent that there are annual cost adjustments included in the Company's BPO 2.0 contracts with its suppliers of outsourced services, those cost adjustments

should be known and measureable. Therefore, application of a generalized inflation factor to those costs is inappropriate and unnecessary.

Q. DOES THE CONSUMER PRICE INDEX ("CPI") PROVIDE A REASONABLE INDICATOR OF THE EFFECTS OF INFLATION ON WASHINGTON GAS' NON-LABOR DISTRIBUTION O&M COSTS?

A. No, it does not. The Consumer Price Index is developed by the U.S. Bureau of Labor Statistics ("BLS") to estimate the influence of inflation on a "market basket" of goods and services typically purchased by **individual consumers**. The mix of goods and services that Washington Gas purchases as part of its Non-Labor Distribution O&M expenses has no resemblance to the mix of goods and services upon which BLS relies to estimate its CPI. WG's Non-Labor O&M costs include large expenditures for such items as Software, IT infrastructure and related services, and financial, legal, engineering, accounting and consulting services that rarely comprise a significant portion of individual consumers' expenditures. Thus, there is little reason to expect that changes in the costs of the Non-Labor goods and services that Washington Gas incurs on an annual basis will reflect a mix of products and services that resembles those used by the U.S. Bureau of Labor Statistics to estimate inflationary impacts for **individual consumers**.

Q. ARE THERE REASONS WASHINGTON GAS SHOULD BE VIEWED DIFFERENTLY THAN BGE WITH RESPECT TO THE APPROPRIATENESS

OF A BROADLY APPLIED INFLATION ADJUSTMENT TO NON-LABOR COSTS?

A. Yes. Contrary to the Company's position as presented by Witness Tuoriniemi[21] the Commission's acceptance of an inflation factor adjustment to non-labor costs for BGE in Case No. 9484 is not an appropriate precedent for approval of Washington Gas' request for an inflation adjustment to its Non-Labor in this proceeding. Washington Gas' extensive outsourcing of service for a number of functional areas differentiates the Company from BGE. Furthermore, the application of an inflation factor to Washington Gas' costs for outsourced services would effectively erode savings that the Company estimated that its BPO 2.0 outsourcing activities would generate for ratepayers.

Q. WHAT IS YOUR RECOMMENDATION REGARDING WG'S PROPOSED ADJUSTMENT 21?

A. I recommend that the Commission **reject** WG's proposed inflation adjustment to its Non-Labor Distribution O&M expenses, and remove the Company's calculated **$907,643** inflation adjustment to Non-Labor costs from its revenue increase request in this proceeding.

[21] WG Exhibit (RET), the Direct Testimony of Witness Tuoriniemi, pages 51-52.

4. <u>WG's Corporate Scorecard and Incentive Compensation</u>

Q. DO YOU HAVE ANY OBSERVATIONS REGARDING THE CORPORATE SCORECARD THAT WITNESS O'BRIEN PRESENTS IN THIS PROCEEDING?

A. I do. As in several past proceedings, Washington Gas through the Direct Testimony of Witness O'Brien presents a Corporate Scorecard.[22] Although the value of the measures presented in that Scorecard is, at best, questionable from a ratemaking perspective, Witness O'Brien's testimony suggests that the Corporate Scorecard supports "*the reasonableness of the rates*" the Company proposes in this proceeding.[23] I do not agree. As I will explain further below, the Company's Corporate Scorecard fails to provide an objective assessment of the Company's performance and fails to offer any compelling support for "*the reasonableness of the rates*" that Washington Gas proposes in this proceeding.

Q. DOES THE COMPANY'S CORPORATE SCORECARD HAVE ANY DIRECT INFLUENCE ON WASHINGTON GAS' DETERMINATION OF ITS REVENUE REQUIREMENT IN THIS PROCEEDING?

A. Yes. The Direct Testimony of WG Witness Gibson indicates that the Company removed from its revenue increase request 20% of its costs for short-term incentives.[24] WG further indicates, through Witness Gibson's testimony and the supporting calculations for Adjustment 13, that the referenced elimination of 20%

[22] See Witness O'Brien's Direct Testimony at page 11 and Exhibit JDO-1.
[23] Ibid.
[24] WG Exhibit (ABG), the Direct Testimony of WG Witness Gibson, page 14, lines 11-14.

of the Company's Short-Term Incentive ("STI") costs is linked to the weighting of financial performance measures in the Company's Corporate Scorecard.[25]

Q. DO YOU OPPOSE THE COMPANY'S ELIMINATION OF 20% OF ITS SHORT-TERM INCENTIVE COSTS?

A. No. I do not. As it appears, the Company did not achieve either of its Financial Performance Targets, that elimination appears appropriate. However, my recommendation is that the Company should eliminate at least **another 25%** of its STI costs for a total elimination from rates of **at least 45%** of WG's STI costs. Specifically, I recommend that the Commission deny WG recovery of STI costs associated with: (1) its O&M/Customer target which was not achieved; (2) its Employee Work Safety target which was only achieved by significantly easing the target used in the prior case; and (3) its System Safety and Pipeline Integrity target which fails to reflect increases in hazardous leaks on the Company's distribution system.[26] Combined those three items are given a 25% weighting by Washington Gas, and I recommend that the entire amount for each of those performance measures be excluded from rates.

[25] Ibid. and Exhibit RET-6, Adjustment No. 13, page 1 of 5.

[26] As presented in Exhibit JOB-1 the Company's FY 2019 weights for the referenced performance measures are 5% for O&M per Customer, 10% for Employee Work Safety, and 10% for System Safety/Pipeline Integrity. In total, those three performance areas represent 25% of the Company's Scorecard performance weights.

Q. PLEASE EXPLAIN FURTHER THE BASIS OF YOUR POSITION WITH RESPECT TO THE COMPANY'S PERFORMANCE IMPROVEMENT TARGET FOR O&M PER CUSTOMER?

A. In Case No. 9605 WG's Corporate Scorecard showed an O&M per customer target of ≤ $285 for FY 2018. WG's actual result was $292 per customer, indicating that WG was **not** successful in meeting its FY 2018 target. In this case the Company's target for O&M per customer is for the 15-month period that it uses for CY 2019 is ≤ $390[27] per customer, but the Company's actual results for CY 2019 yielded a cost of **$403.71** per customer. Again, WG failed to meet its chosen target. The Company's Scorecard also indicates that when the Company failed to meet its FY 2018 target, it significantly increased its annualized O&M target for the next period. The Company's O&M per customer target of ≤ $390 for CY 2019 (which the Company defined as a 15-month period) equates to a 12-month target of roughly $312 per customer. Thus, when WG's CY 2019 target is presented as a 12-month equivalent cost, it represents a **9.5% increase** over the Company's FY 2018 O&M per customer target. Given Witness Tuoriniemi's representation that the average inflation rate over the last five years has been 1.24%,[28] WG's chosen O&M costs per customer target for CY 2019 reflects an increase that equates to more than **7.6 times** the Company's computed average level of inflation. In other words, the Company's chosen O&M per Customer

[27] The Company's O&M per customer target for CY 2019 (which it has defined as a 15-month period) would appear to equate to a 12-month (annualized) target of $312 per customer. That represents a 9.5% increase. Thus, WG has inflated its O&M per customer target by several times the rate of inflation.
[28] The Direct Testimony of WG Witness Tuoriniemi, page 52, lines 8-12.

performance target for CY 2019 is itself inconsistent with the notion that the Company is successfully controlling its O&M costs.

Furthermore, the test year data WG presented in Exhibit ABG-3 yields an average O&M cost per Customer (excluding Purchased Gas costs) for the system of $332.73, and the comparable measure for Maryland is $340.89. Again those results are clearly above the 12-month equivalent target for O&M per customer computed from the Company's Corporate Scorecard.

Q. WHY SHOULD THE COMPANY BE DENIED RECOVERY OF SHORT-TERM INCENTIVES FOR MEETING ITS EMPLOYEE WORK SAFETY TARGET?

A. In Case No. 9605 Washington Gas' Corporate Scorecard showed a target for Employee Work Safety for FY 2018 that was a DART rate of $\leq$ 0.90. But its actual performance produced a result of 1.71. In other words, the Company missed its target level of performance by nearly 90%. WG's response was to set its 2019 target to $\leq$ 1.50 or 67% higher than its FY 2018 target. Although WG now claims to have met the FY 2019 target that **it set for itself** in Case No. 9605, the value to its employees and ratepayers of meeting that greatly relaxed standard is, at best questionable. Nowhere did the Company explain why it was unable to meet its FY 2018 target or why a substantial upward adjustment to the target was appropriate for FY 2019. Likewise, the Company provided no assessment of the benefits that its employees and/or ratepayers would derive from the more relaxed performance target it presented for FY 2019. As a result,

this Commission has no basis for determining that the benefits derived from the Company's actual FY 2019 performance justify the costs of the incentives paid.

Q. IS IT YOUR RECOMMENDATION THAT THE COMMISSION SHOULD GIVE NO WEIGHT TO WG'S SYSTEM SAFETY/PIPELINE INTEGRITY PERFORMANCE?

A. No, that is not my position. System safety and pipeline integrity are important and should be weighted more heavily than Washington Gas' Corporate Scorecard suggests. The problem is that the performance target WG has established for itself does not reflect the growing numbers of hazardous leaks on its system, either in Maryland or across all of its service territories. Until WG can demonstrate significant reductions in hazardous leaks on the mains and services that comprise its Maryland distribution system, no STI costs for pipeline safety performance should be borne by WG's Maryland ratepayers.

Q. ARE THERE OTHER ELEMENTS OF THE COMPANY'S CORPORATE SCORECARD ON WHICH YOU WOULD LIKE TO COMMENT?

A. Before accepting WG's assessment of its performance in the area of Customer Satisfaction, the Commission should review the history of Washington Gas' Corporate Scorecard performance targets for Customer Satisfaction. Table 10 shows WG's Customer Satisfaction targets and claimed results that have been presented from Case No. 9322 that was filed in April 2013 to the present case. In Case No. 9322 Washington Gas reflected a FY 2012 Customer Satisfaction

performance target of ≥ 88%, and indicated that it had actually achieved 89.9% Customer Satisfaction. Since then all of the Company's targets and claimed actual results have been below those for FY 2012.

Table 10

Washington Gas Customer Satisfaction:
Company Set Performance Targets and Reported Actual Performance

Case No.	Time Period	Customer Satisfaction Target	Customer Satisfaction Actual
9322	FY 2012	≥ 88.0%	89.9%
9481	FY 2018	≥ 85.0%	a/
9605	FY 2018	≥ 85.0%	87.4%
9651	CY 2019	≥ 86.8%	89.3%

a/ *Actual performance only shown for the first quarter of FY 2018.*

Although the Company's Customer Satisfaction performance target for CY 2019 in this case is raised slightly from that in the prior two cases (i.e., from ≥ 85% to ≥ 86.8%, the CY 2019 target remains below both the Company's Customer Satisfaction target and its claimed actual performance for FY 2012. In the absence of data that would allow comparison of WG's customer satisfaction with those for other gas distribution utilities it is difficult to ascribe value to the Company's targeted and achieved levels of Customer Satisfaction, particularly when the measures relied upon do not necessarily reflect a representative sample of the attitudes of the Company's customers and at best depict a maintenance of past levels as opposed to measureable improvement.

In conclusion, the Corporate Scorecard that Witness O'Brien presents in Exhibit JDO-1 offers at best a lack luster assessment of Washington Gas' overall

performance. Very little customer value can be derived from the performance targets Washington Gas did achieve, and thus, the Company's recovery of substantial incentive compensation has not been justified. Even the 55% or STI that my recommendation would allow could be viewed as generous.

Q. SHOULD THE COMMISSION ACCEPT THE COMPANY'S ARGUMENT THAT SHORT-TERM INCENTIVE COMPENSATION IS A NECESSARY COMPONENT OF ITS EMPLOYEE COMPENSATION PACKAGE?

A. No. I have no issue with the Company offering incentive compensation as part of its overall compensation package. However, incentive compensation must be earned through the achievement of meaningful performance targets. Payment of incentives for poor or lackluster performance undermines the very purpose of such compensation. Thus, for incentive compensation to be effective it must be viewed as an **opportunity** for enhanced earnings, not a guarantee. If WG believes it must provide incentive compensation for either performance that does not meet its targets or for achievement of targets that do not reflect actual performance, it is free to do so. However, Maryland ratepayers should not be required to bear the costs of such incentive payments.

Q. WHAT IS YOUR RECOMMENDATION REGARDING THE ELIMINATION OF ELEMENTS OF WG'S SHORT-TERM INCENTIVE COSTS?

A. In WG's computation of Adjustment 13 Washington Gas computes that elimination of 20% of its Short-Term Incentive costs would lower its Maryland STI

expense by $283,874. If that computation is adjusted to reflect elimination of a total of 45% of the Company's test year STI expense, WG's STI adjustment would increase to **$638,717**[29] and represent the elimination from rates of another $354,843 of allocated Maryland STI expense. However, I would also encourage the Commission to consider elimination of the Company's STI expense for Customer Satisfaction. That would remove another 10% of the Company's Maryland STI expense and increase the amount removed from WG's Maryland STI expense for ratemaking purposes to $780,654.[30] Furthermore, there is nothing sacrosanct about the weights that Washington Gas has chosen to apply to the performance measures listed in its Corporate Scorecard. For ratemaking purposes, this Commission should feel free to give greater weight to certain measures, such as pipeline safety and numbers of hazardous leaks, and lesser weight to such items as Employee Engagement, Community Involvement, and/or the percentage of Merger Commitments satisfied.[31]

5. Overall Revenue Requirement

Q. WHAT IS THE OVERALL IMPACT OF AOBA'S REVENUE REQUIREMENTS RECOMMENDATIONS ON WASHINGTON GAS' REVENUE INCREASE REQUEST IN THIS PROCEEDING?

[29] The revised adjustment to Washington Gas' Maryland Short-Term Incentive expense is computed as follows: $283,874 / .2 * .45 = $638,717.
[30] If an additional 10% is removed from WG's Maryland STI expense, the value of a 55% elimination of Maryland STI costs would be computed as follows: $283,874 / .2 * .55 = $780,654.
[31] The presumption should be that Washington Gas will meet 100% of its merger commitments.

A. The combination of AOBA's Capital Structure, Cost of Equity, and Operating Expense recommendations in this proceeding reduces WG's requested revenue increase by nearly **$19.8 million**, leaving a proposed overall revenue increase for the Company of not more than **$8.6 million**. Supporting detail for AOBA's revenue requirements position is presented in **Exhibit BRO-6**. This initial AOBA recommendation is premised on its examination of a limited number of revenue requirements issues. AOBA reserves the right to revise its revenue increase recommendation for Washington Gas in this proceeding after AOBA has had the opportunity to review the testimony of witnesses for Staff, OPC and other parties.

C. Other Issues

1. Safety Response Costs

Q. HAS WASHINGTON GAS WITNESS TUORINIEMI MADE REPRESENTATIONS REGARDING THE COMPANY'S RECOVERY OF SAFETY RESPONSE COSTS?

A. Yes. At the end of his Direct Testimony, Witness Tuoriniemi references his Exhibit RET-7 and suggests that WG has incurred substantial unrecovered Safety Response costs. Based on his presentation in Exhibit RET-7, Witness Tuoriniemi computes that, since the start of the test year for Case No. 9481, WG has incurred $74.2 million for Safety Response costs and only received rate recovery of $38.3 million. Thus, he concludes that $35.9 million of its Maryland

Safety Response Costs were excluded from rates. However, his analysis is inaccurate and misleading.

Q. ON WHAT BASIS DO YOU ASSESS THAT THE COMPANY'S CLAIMS REGARDING COSTS EXCLUDED FROM RATES ARE MISLEADING?

A. First, Exhibit RET-7 appears to have been hastily assembled, and lists data for the first three months of 2019 **twice**. Moreover, each time those months are listed, they are shown with different dollar amounts, and there is no means of determining which set of expenditures for those months, if either, is correct.

Second, the Company's presentation in Exhibit RET-7 erroneously suggests that prior to the effective date for new rates in Case No. 9481, Washington Gas was provided no recovery of Safety Response Costs. However, the Company's use of the phrase "Safety Response Costs" in a base rate filing revenue request did not appear for the first time until Case No. 9605 when Washington Gas (through the Direct Testimony of Witness Tuoriniemi) asked for approval of a "Safety Response Tracker." In Case No. 9481 the Company referenced the same costs as "leak management expenses."

The fact that Washington Gas did not identify costs as "Safety Response Costs" in prior cases does not mean that the Company was provided no recovery of such costs in rates established in cases filed prior to Case No. 9481. The Company's historical data document the fact that Washington Gas has long incurred costs to respond to odor calls and leaks on its Maryland distribution system. Yet, Washington Gas offers no assessment of the extent to which costs

for activities, that it now classifies as "safety response" activities, were included in its past revenue requests as part of its general operation and maintenance expenditures. The only thing that is **new** in the Company's last two cases is the Company's effort to segregate its "safety response" (a.k.a., leak management) expenditures from its other distribution system operation and maintenance expenditures.

Third, the presentation in Exhibit RET-7 fails to observe since the effective date for new rates in Case No. 9605, the Company has **over-recovered** the Safety Response Costs that it attributes to its Maryland jurisdictional service. The data presented in Exhibit RET-7 indicate that for the period from October 2019 through May 2020, the Company **over-recovered** its Maryland Safety Response Costs by more than **$900,000**.

Fourth, WG's allocations or assignments of Safety Response costs to Maryland in Exhibit RET-7 are presented without support. The percentages of monthly amounts attributed to Maryland vary from a low of 35.11% of the Company's total amount in July 2019 to a high of 61.83% for August 2019, and the reasons for the observed variations are undisclosed.

Q. DID THE COMMISSION ERR IN ITS DECISION TO EXCLUDE PROJECTED INCREASES IN LEAK RESPONSE COSTS FROM THE COMPANY'S REVENUE REQUIREMENT IN CASE NO. 9481?

A. No. The projections upon which the Company's requested increase was premised did not reflect known and measureable costs. Although the Company's

subsequently incurred costs for **Safety Response** activities were higher than anticipated, Washington Gas must be required to manage its resources in a prudent and cost-effective manner. The increases in Leak Response and Leak Repair costs (a.k.a., Safety Response costs) that Washington Gas has incurred raise serious questions regarding its ability to safely and economically operate its system. Moreover, in the context of Washington Gas' accelerated pipe replacement activities under the STRIDE program, the Commission had no basis in Case No. 9481 for assuming further significant increases in the Company's leak rates and safety response costs.

Q. SHOULD THE COMMISSION PROVIDE WASHINGTON GAS A MECHANISM FOR RECOVERY OF THE SAFETY RESPONSE COSTS THAT THE COMPANY CLAIMS WERE EXCLUDED FROM RATES?

A. No. The Commission should not be swayed by the analysis that Washington Gas presents in Exhibit RET-7. The Commission should find that WG's representation of Safety Response costs that have been excluded from rates are inaccurate and unreliable. The Commission should also conclude that providing Washington Gas an effective "*blank check*" for expenditures that it now classifies as "Safety Response Costs" is not a solution to the problem.

AOBA is as concerned as any party with the safety of Washington Gas' distribution system. The Flower Branch Apartment complex is operated by an AOBA member organization, and AOBA members in each of WG's jurisdictional service areas are acutely aware of the risks associated with WG's operations.

Yet, despite being provided funding for accelerated pipe replacement under the STRIDE program, **hazardous** leaks on the Company's distribution system have continued to increase at an alarming rate. Washington Gas must be held accountable for the condition of its system, and its failure to maintain its system in a state that would allow more reasonable and predictable Safety Response costs. Rather than compensating the Company for past costs that it claims were excluded from rates, the Commission might wish to consider creating incentives for the Company to reduce the annual numbers of hazardous leaks on its Maryland distribution system.

Q. HOW COULD THE COMMISSION STRUCTURE AN INCENTIVE MECHANISM TO FOSTER REDUCTIONS IN HAZARDOUS LEAKS ON WASHINGTON GAS' MARYLAND DISTRIBUTION SYSTEM?

A. An incentive mechanism to encourage reductions in the Company's annual numbers of hazardous leaks could have two components. First, Washington Gas could be required to absorb a significant percentage (e.g., 50%) of any increase in leak management/safety response costs attributable to further increases in its annual numbers of hazardous leaks. Second, the Company could be provided a financial incentive for reductions achieved in its reported annual numbers of hazardous leaks on the mains and services that comprise its Maryland distribution system.

2. WG's Normal Weather Study

Q. HAVE YOU REVIEWED AND ANALYZED THE DATA AND METHODS WITNESS GIBSON HAS USED IN THE PREPARATION OF WASHINGTON GAS' NORMAL WEATHER STUDY FOR THIS PROCEEDING?

A. Yes, I have reviewed the details of that study and compared the data and methods employed with those used by the Company in prior cases.

Q. WHAT HAVE YOU CONCLUDED FROM YOUR REVIEW OF THE NORMAL WEATHER STUDY THAT WASHINGTON GAS PRESENTS IN THIS CASE AS EXHIBIT ABG-1?

A. My review has identified highly questionable analytic techniques, as well as significant inconsistencies in the data and methods employed by the Company to estimate Normal Weather gas use by rate class. Although errors in the Company's estimates of total Normal Weather gas use for all rate classes may not be larger in percentage terms, the reliability of the Company's estimates of Normal Weather gas use for certain individual rate classes must be questioned. As the class detail developed in the Normal Weather Study serves as a fundamental building block for the Company's customer class cost allocations and rate design analyses, the inconsistencies in the data and methods employed have a direct impact on the reasonableness and appropriateness of the rates the Company presents by class of service.

Q. CAN YOU PROVIDE AN EXAMPLE OF THE INCONSISTENCIES IN THE DATA WG WITNESS GIBSON HAS UTILIZED IN HIS NORMAL WEATHER STUDIES?

A. Yes. My review of the Company's Normal Weather Study in this case has found substantial unexplained inconsistencies with the data employed for certain classes and certain months. To illustrate such differences, Table 11 provides a comparison of the monthly usage data Washington Gas has employed in its regression analyses for its Maryland C&I Heating/HC class for the months of January through December 2017.[32] However, as highlighted below, the monthly usage data for the winter months (January through March and November through December 2017) reflect significant differences across the Company's three most recent cases.

Table 11
Reported Actual C&I Heating/HC > 3,000 Gas Use

	Washington Gas MD PSC Case Nos.		
	9481	**9605**	**9651**
January 2017	25,881,963	25,881,230	**21,128,230**
February 2017	20,623,200	20,624,398	**25,597,888**
March 2017	20,152,939	20,153,461	**21,427,219**
November 2017	10,625,529	10,636,277	**13,718,286**
December 2017	19,548,261	18,685,804	**18,597,185**

Washington Gas' "**actual**" November 2017 gas use for the C&I Heating/ HC > 3,000 class is reported as being **29% higher** in this case (Case No. 9651)

[32] Washington Gas uses a rolling 36-month period to develop regression relationships between usage and heating degree days for each rate class. As the 36 month periods used in this case and the Company's two prior cases (Case No. 9481 and 9605) were staggered by one-year, each referenced case included data for each class for each month of calendar year 2017.

than in Case Nos. 9481 and 9605. Similarly, February 2017 "**actual**" gas use for the C&I Heating/ HC > 3,000 class is reported as being **24% higher** in this case (Case No. 9651) than in Case Nos. 9481 and 9605. On the other hand, the Company's reported January 2017 "**actual**" gas use for the C&I Heating/ HC > 3,000 class in this case is **18% lower** than the comparable measures of actual gas use for that class that were included in WG's regression analysis input data in the two prior cases. However, for other months the differences in the measures of "actual" sales used in the Company's regressions in Case No. 9481, 9605, and 9651 were relatively small.

The inconsistencies in these data are alarming. Even more alarming is the fact that Washington Gas could make such substantial adjustments to prior years' actual usage data without any mention of those adjustments or explanation of the reasons for those adjustments and how they were determined. Accepting **arguendo** that the data Washington Gas has used in this case represent an improvement over the data used in the two prior cases for this class, the Commission can only conclude that the estimated relationships between gas use and heating degree days in Case No. 9605 (on which the Company's current rates were developed) were erroneous.

The importance of variations in reported actual therm use for the months of January and February is further amplified by the fact that usage for those months is used by Washington Gas to estimate Peak Day use for cost allocation and rate design purposes. Thus, large changes in reported "actual" therm use

for those months can also impact the Company's estimates of Peak Day demand.

Q. ARE THE PROBLEMS IN WASHINGTON GAS' DATA LIMITED TO THE C&I HEATING/HC > 3,000 CLASS?

A. No, they are not. Variations in reported "actual" therms and numbers of months billed are found for every rate class. Although for most classes such variations are comparatively small, more significant variations in the data used for the same time period are also found for other classes. For the C&I Non-Heating class, the regression input data for therm use appears to align fairly closely with data for the comparable monthly periods that were used in Case No. 9481, but they differ significantly from the data inputs used for every month of calendar year 2017 in Case No. 9605. The page that presents the Company's regression input data for the C&I Non-Heating class in this case[33] includes a notation which reads "***Less Non-Weather Sensitive.***" Yet, WG offers no explanation of how the amounts removed as "Non-Weather Sensitive" volumes were identified for the purposes of Witness Gibson's exhibits, and no documentation is provided in this workpaper that explicitly show the removal of Non-Weather Sensitive volumes.

Moreover, Table 12 highlights some noticeable differences in the data for "actual" therms that Washington Gas has used for the Interruptible class in this case and in Case No. 9605.

[33] Case No. 9651, Exhibit ABG-1, Schedule 3, page 15 of 18.

Table 12

Reported Actual Data for WG's MD Interruptible Class

Case No.	Month Year	Billed Months	WG Actual Therm Sales Total	WG Actual Therm Sales Per Bill	Degree Days	Use per HDD Per Bill
9651	Dec 2018	169	**12,654,033**	74,875.93	648	115.55
9605	Dec 2018	158	9,839,356	62,274.41	648	96.10
9651	Nov 2018	169	9,153,378	54,162.00	323	167.68
9605	Nov 2018	**191**	9,511,336	49,797.57	323	154.17

Q. ARE THERE OTHER NOTABLE PROBLEMS IN THE REGRESSION ANALYSES WG WITNESS GIBSON HAS PERFORMED TO ESTIMATE NORMAL WEATHER USAGE?

A. Yes. Witness Gibson demonstrates little understanding of the importance of time series relationships in the data he employs to estimate usage per degree day relationships for the Company's Normal Weather Study. Exhibit ABG-1, Schedule 3, shows 36 consecutive months of usage data for each rate class and exhibits pronounced seasonal usage characteristics for several classes. However, Witness Gibson treats those 36 months of data for each class as if they represented randomly selected observations rather than systematically related time series data.

When Witness Gibson encounters data for a month that he considers "anomalous," he simply excludes the month from his regression inputs without regard for time-series relationships. When Witness Gibson believes the Company's "actual" data for class for a given month is "anomalous," he marks

that month in Exhibit ABG-3, Schedule 3, with a " * " to the left of the month-year designation, and he excludes the data for that month from his regression analyses. Such disruptions of time series data have no validity in the time series analyses that Witness Gibson presents.

The Commission should also note that for several rate classes Witness Gibson excludes multiple monthly observations. The most extreme situation is the C&I Non-Heating class for which he **excludes** data for **11 months** out of the 36 month period from January 2017 through December 2019. If the Company's data for 11 out of 36 months are considered anomalous, the Commission should question both the accuracy and reliability of the Company's data and the criteria the Company uses for identifying data anomalies.

I have identified multiple instances in which data for a month that was included in his regression analyses in the prior case are excluded as anomalous observations in this case. In addition, I find multiple instances in which data for a month that was determined to be **anomalous** in the Company's prior case are included in the Company's regressions in this case. Furthermore, the Commission should note that data for weather sensitive winter months are far more likely to be excluded from Witness Gibson's regression analyses than data for summer months. The ratio is roughly four to one.

Witness Gibson apparently believes that exclusion of monthly observations from such a time series analysis represents a valid analytic technique. However, I can find no statistical support for that presumption. Importantly, literature suggests that the methods used to identify and exclude outliers from

time series data can substantively alter research conclusions. For this reason, efforts to exclude data from time series data sets represent a methodological challenge, and should not be treated lightly.

Q. HOW CAN THE FREQUENCY OF "OUTLIERS" OR ANOMALIES IN THE DATA USED BY THE COMPANY TO COMPUTE ITS NORMAL WEATHER STUDY REGRESSIONS BE REDUCED?

A. First, the Company should do a more thorough "cleaning" of its data inputs before they are used in Normal Weather Study analyses. If the Company's input data were cleaned to ensure a proper alignment of the units of gas service labeled as "actual" with the periods for which the Company's actual heating degree day ("HDD") measures employs and that reported "actual" therm use measures are accurate and fully representative of each classes service requirements. Second, the Company should be required to expand the number of months for which data are included in the inputs for its Normal Weather regression analyses. At present, Washington Gas uses 36 months of data (subject to exclusions). In the context of longer-term weather and usage trends, that is a comparatively short period for assessing relationships between degree days and gas use by rate class. Use of five or more years of data (i.e., at least 60 consecutive months) of data would provide greater perspective and reduce the frequency with which data are assessed to represent outliers.

Q. WG WITNESS GIBSON TESTIFIES THAT "*FOR ALL CLASSES USAGE SPIKES IN THE WINTER SUCH THAT 45% OF THROUGHPUT OCCURS IN JUST THREE MONTHS: THE JANUARY THROUGH MARCH BILLING PERIODS*."[34] IS THAT REPRESENTATION CORRECT?

A. It is reasonable to suggest that in aggregate for all classes, but the percentage of annual gas use that falls in the January through March billing periods is not uniform across rate classes. For the C&I and GMA Non-Heating classes only about **30%** of their total CY 2019 gas use occurred in the months of January through March. On the other hand, Residential Heating and Small C&I Heating customers had about 54% of their CY 2019 total gas use in the January through March period. Thus, heating degree day measures are an important determinant of gas use for heating classes, but are a less important determinant of gas use for C&I and GMA non-heating classes.

Q. HOW SHOULD THE COMMISSION ADDRESS THE PROBLEMS YOU HAVE IDENTIFIED IN THE COMPANY'S NORMAL WEATHER STUDY?

A. The Commission should find that Washington Gas' current approach to multiple months of data for several classes does not yield results by rate class in which this Commission can place reasonable confidence. The Company should be required to clean its data inputs more carefully before computing weather normalizations. WG should also be required to exhibit greater respect for the time series nature of the data inputs on which it relies. In addition, the Company

[34] WG Exhibit (ABG), the Direct Testimony of WG Witness Gibson, page 9, lines 8-10.

should be required expand the number of months for which data is included in its regression inputs and evaluate alternative criteria for identifying and evaluating the causes of anomalous monthly observations.

V. CONCLUSION

Q. DO YOU HAVE ANY CONCLUDING COMMENTS?

A. I do. This presentation shows that Washington Gas' request for a $28.4 million revenue increase is not justified. The increase the Company seeks in its authorized ROE is totally inappropriate and not reflective of current financial market conditions, historically low interest rates, and the economic upheaval that continues to confront the Company's Maryland ratepayers as the Covid-19 pandemic drags on. The Company's shareholders and executives should not be provided increased profitability or increased compensation when its customers have been forced by the Covid-19 pandemic to tighten their belts and trim their budgets.

The Company's rising numbers of hazardous leak rates, increasing Unaccounted for Gas percentage, and declining annual amounts of pipe replaced portray a neglected and poorly managed distribution system. Washington Gas must be held accountable for the poor state of its Maryland distribution system. The Commission should clearly signal that a continuation of current trends is not now, and will not be, acceptable. Moreover, the Company's continued use of the STRIDE program to accelerate cost recovery without accelerating replace-

ment of its oldest and most risk-prone pipe is inconsistent with the goals and objectives of that program. For these reasons, the Commission should make every effort to ensure that any increase granted the Company in this proceeding properly reflects Washington Gas' less than satisfactory performance and the significant economic constraints under which its customers are now operating.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes. It does.

Washington Gas Light Company

MD PSC Case No. 9651

Maryland Miles of Mains Replaced by Year

From Washington Gas Distribution System Annual Reports to PHMSA for 2010 - 2019

	Miles of Mains in System				Miles of Mains Replaced				% of Total Mains Replaced
	Unprotected Steel		Cast	Total	Unprotected Steel		Cast		
Year	Bare	Coated	Iron	All Types	Bare	Coated	Iron	Total	
2010	152	180	75	5,831					
2011	148	131	74	5,864	4	49	1	54	0.9%
2012	146	111	73	5,915	2	20	1	23	0.4%
2013	142	101	71	5,959	4	10	2	16	0.3%
2014	133	85	65	6,025	9	16	6	31	0.5%
2015	128	74	60	6,026	5	11	4	21	0.3%
2016	118	69	55	6,089	10	5	5	20	0.3%
2017	109	66	51	6,137	9	2	4	16	0.3%
2018	100	66	46	6,184	9	0	5	15	0.2%
2019	95	66	44	6,306	4	0	2	7	0.1%
Total Replaced					57	114	31	202	3.5%

Washington Gas Light Company

DC PSC Formal Case No. 1162

WG 10 Year History of Hazardous Gas Leaks on Mains and Services

2010 - 2019 from Washington Gas Annual Reports to PHMSA by Jurisdiction

Washington Gas - MD

Year	Miles of Mains	Numbers of Services	Hazardous Leaks - All Causes			Hazardous Leaks per 1,000 Main Miles	Hazardous Leaks per 1,000 Services
			Mains	Services	Total		
2010	5,831	403,395	227	745	972	38.93	1.85
2011	5,864	406,755	208	799	1,007	35.47	1.96
2012	5,915	410,837	276	796	1,072	46.66	1.94
2013	5,959	415,859	276	916	1,192	46.31	2.20
2014	6,025	420,930	382	1,019	1,401	63.41	2.42
2015	6,026	423,464	348	1,076	1,424	57.75	2.54
2016	6,089	428,299	351	1,263	1,614	57.64	2.95
2017	6,137	433,388	506	1,579	2,085	82.45	3.64
2018	6,184	439,776	671	1,734	2,405	108.50	3.94
2019	6,306	445,208	801	1,748	2,549	127.03	3.93
% Incr 2010-19	***8.1%***	***10.4%***	***252.9%***	***134.6%***	***162.2%***	***226.3%***	***112.6%***

Washington Gas - DC

Year	Miles of Mains	Numbers of Services	Hazardous Leaks - All Causes			Hazardous Leaks per 1,000 Main Miles	Hazardous Leaks per 1,000 Services
			Mains	Services	Total		
2010	1,190	122,732	224	267	491	188.24	2.18
2011	1,190	122,995	232	314	546	194.96	2.55
2012	1,197	123,254	227	329	556	189.62	2.67
2013	1,199	123,536	227	343	570	189.39	2.78
2014	1,212	123,925	291	398	689	240.15	3.21
2015	1,214	124,228	333	474	807	274.30	3.82
2016	1,216	124,752	342	478	820	281.27	3.83
2017	1,216	125,022	263	494	757	216.35	3.95
2018	1,216	125,355	454	596	1,050	373.39	4.75
2019	1,223	125,287	511	629	1,140	417.74	5.02
% Incr 2010-19	***2.8%***	***2.1%***	***128.1%***	***135.6%***	***132.2%***	***121.9%***	***130.8%***

Washington Gas - VA

Year	Miles of Mains	Numbers of Services	Hazardous Leaks - All Causes			Hazardous Leaks per 1,000 Main Miles	Hazardous Leaks per 1,000 Services
			Mains	Services	Total		
2010	6,004	429,550	185	705	890	30.81	1.64
2011	6,048	433,868	204	717	921	33.73	1.65
2012	6,109	438,511	220	642	862	36.01	1.46
2013	6,162	443,584	536	914	1,450	38.30	2.06
2014	6,220	448,667	397	1,182	1,579	63.83	2.63
2015	6,243	451,108	334	1,113	1,447	53.50	2.47
2016	6,278	455,897	375	1,359	1,734	59.73	2.98
2017	6,320	460,599	441	1,519	1,960	69.78	3.30
2018	6,379	465,994	531	1,523	2,054	83.24	3.27
2019	6,440	470,743	529	1,491	2,020	82.15	3.17
% Incr 2010-19	***7.3%***	***9.6%***	***185.9%***	***111.5%***	***127.0%***	***166.6%***	***93.0%***

Washington Gas Light Company

MD PSC Case No. 9651

WG Costs of Capital with the Company's Average Test Year and Recommended Capital Structures

Ln No	Capital Structure Component	Capitalization by Capital Component	% of Total Capital	Cost Rate	Tax Factor	Effective Pre-Tax Cost Rate	Weighted Pre-Tax Cost Rate	Computed Effective Cost of Capital
		WG's Average Test Year Capital Structure						
1	Long-Term Debt	$ 1,268,959,000	40.19%	4.69%	97.81%	4.80%	1.93%	$ 60,846,720
2	Short-Term Debt	$ 245,817,000	7.78%	1.98%	97.81%	1.98%	0.15%	$ 4,867,177
3	Preferred Stock	$ 14,087,000	0.45%	4.79%	70.89%	6.76%	0.03%	$ 951,851
4	Common Equity	$ 1,628,906,000	51.58%	10.40%	70.89%	14.67%	7.57%	$ 238,970,552
5	Total	$ 3,157,769,000	100.00%				9.68%	$ 305,636,300
6	Maryland % of Total Rate Base Investment							38.71%
7	Maryland Overall Cost of Capital							$ 118,306,668
		WG's Proposed Capital Structure						
8	Long-Term Debt	$ 1,318,356,000	41.75%	4.69%	97.81%	4.80%	2.00%	$ 63,215,312
9	Short-Term Debt	$ 116,757,000	3.70%	1.98%	97.81%	1.98%	0.07%	$ 2,311,789
10	Preferred Stock	$ -	0.00%	4.79%	70.89%	6.76%	0.00%	$ -
11	Common Equity	$ 1,722,656,000	54.55%	10.40%	70.89%	14.67%	8.00%	$ 252,724,254
12	Total	$ 3,157,769,000	100.00%				10.08%	$ 318,251,355
13	Maryland % of Total Rate Base Investment							38.71%
14	Maryland Overall Cost of Capital							$ 123,189,744
15	Increase in Effective Overall Cost of Capital Attributable to WG's Recommended Capital Structure (Line 14 - Line 7)							**$ 4,883,076**

Washington Gas Light Company

MD PSC Case No. 9651

WG Costs of Capital under WG and AOBA Capital Structure and Cost Rate Recommendations

Ln No	Capital Structure Component	Capitalization by Capital Component	% of Total Capital	Cost Rate	Tax Factor	Effective Pre-Tax Cost Rate	Weighted Pre-Tax Cost Rate	Computed Effective Cost of Capital
		WG's Proposed Capital Structure and Cost Rates						
1	Long-Term Debt	$ 1,318,356,000	41.75%	4.69%	97.81%	4.80%	2.00%	$ 63,215,312
2	Short-Term Debt	$ 116,757,000	3.70%	1.98%	97.81%	1.98%	0.07%	$ 2,311,789
3	Preferred Stock	$ -	0.00%	4.79%	70.89%	6.76%	0.00%	$ -
4	Common Equity	$ 1,722,656,000	54.55%	10.45%	70.89%	14.74%	8.04%	$ 253,939,275
5	Total	$ 3,157,769,000	100.00%				10.12%	$ 319,466,375
6	Maryland % of Total Rate Base Investment							38.71%
7	Maryland Overall Cost of Capital							$ 123,660,058
		AOBA Proposed Capital Structure and Cost Rates with 9.60% ROE						
8	Long-Term Debt	$ 1,283,046,000	40.63%	4.69%	97.81%	4.80%	1.95%	$ 61,522,193
9	Short-Term Debt	$ 245,817,000	7.78%	1.98%	97.81%	1.98%	0.15%	$ 4,867,177
10	Preferred Stock	$ -	0.00%	4.79%	70.89%	6.76%	0.00%	$ -
11	Common Equity	$ 1,628,906,000	51.58%	9.60%	70.89%	13.54%	6.99%	$ 220,588,201
12	Total	$ 3,157,769,000	100.00%				9.09%	$ 286,977,571
13	Maryland % of Total Rate Base Investment							38.71%
14	Maryland Overall Cost of Capital							$ 111,084,188
15	Reduction in WG's Requested Overall Cost of Capital (Line 14 - Line 7)							**$ (12,575,869)**

Washington Gas Light Company

MD PSC Case No. 9651

WG Costs of Capital under WG and AOBA Capital Structure and Cost Rate Recommendations

Ln No	Capital Structure Component	Capitalization by Capital Component	% of Total Capital	Cost Rate	Tax Factor	Effective Pre-Tax Cost Rate	Weighted Pre-Tax Cost Rate	Computed Effective Cost of Capital
		WG's Proposed Capital Structure and Cost Rates						
1	Long-Term Debt	$ 1,318,356,000	41.75%	4.69%	97.81%	4.80%	2.00%	$ 63,215,312
2	Short-Term Debt	$ 116,757,000	3.70%	1.98%	97.81%	1.98%	0.07%	$ 2,311,789
3	Preferred Stock	$ -	0.00%	4.79%	70.89%	6.76%	0.00%	$ -
4	Common Equity	$ 1,722,656,000	54.55%	10.45%	70.89%	14.74%	8.04%	$ 253,939,275
5	Total	$ 3,157,769,000	100.00%				10.12%	$ 319,466,375
6	Maryland % of Total Rate Base Investment							38.71%
7	Maryland Overall Cost of Capital							$ 123,660,058
		AOBA Proposed Capital Structure and Cost Rates with 9.25% ROE						
8	Long-Term Debt	$ 1,283,046,000	40.63%	4.69%	97.81%	4.80%	1.95%	$ 61,522,193
9	Short-Term Debt	$ 245,817,000	7.78%	1.98%	97.81%	1.98%	0.15%	$ 4,867,177
10	Preferred Stock	$ -	0.00%	4.79%	70.89%	6.76%	0.00%	$ -
11	Common Equity	$ 1,628,906,000	51.58%	**9.25%**	70.89%	13.05%	6.73%	$ 212,545,923
12	Total	$ 3,157,769,000	100.00%				8.83%	$ 278,935,293
13	Maryland % of Total Rate Base Investment							38.71%
14	Maryland Overall Cost of Capital							$ 107,971,158
15	Reduction in WG's Requested Overall Cost of Capital (Line 14 - Line 7)							**$ (15,688,900)**

Washington Gas Light Company

MD PSC Case No. 9651

WG Jurisdictional Allocation of Federal Income Tax Expense

Ln No	Jurisdiction	Allocated Federal Income Tax 1/	% of Total Federal Income Tax	Allocated Net Rate Base 2/	% of Net Rate Base	Federal Income Tax Allocated on Net Rate Base 3/	Change in Allocated Fed Income Tax
1	Maryland	$ 10,273,135	85.0%	$ 1,205,241,275	38.71%	**$ 4,677,930**	**$ (5,595,205)**
2	District of Columbia	$ (424,121)	-3.5%	$ 551,402,084	17.71%	$ 2,140,169	$ 2,564,290
3	Virginia	$ 2,023,019	16.7%	$ 1,347,357,159	43.27%	$ 5,229,528	$ 3,206,509
4	FERC	$ 213,045	1.8%	$ 9,648,858	0.31%	$ 37,450	$ (175,595)
5	Total	$ 12,085,078	100.0%	$ 3,113,649,376	100.00%	$ 12,085,078	$ -

1/ *From Exhibit ABG-1, Schedule SM, Page 1 of 2, line 16*
2/ *From Exhibit ABG-1, Schedule SM, Page 1 of 2, line 25*
3/ *When rate of return are assumed to be equal for all jurisdictions, net income and allocated rate base are proportional.*

Washington Gas Light Company

MD PSC Case No. 9651

AOBA 's Initial Revenue Requirements Recommendation

(Thousands of Dollars)

Ln No	Description	Washington Gas Position Rate Base	Washington Gas Position Operating Income	Washington Gas Position Revenue Requirement	AOBA Position 1/ Rate Base	AOBA Position 1/ Operating Income	AOBA Position 1/ Revenue Requirement
1	**Unadjusted Amounts**	$1,205,217	$ 79,959		$1,205,217	$ 79,959	
2	Required Revenue at WG's Proposed ROR			$ 18,816			
3	Required Revenue at AOBA's Proposed ROR						$ 3,835
4	**Washington Gas-Proposed RMAs**	$ 20,107	$ (5,135)	$ 9,532	$ 20,107	$ (5,135)	$ 9,532
	AOBA-Proposed Ratemaking Adjustments						
5	Revised Jurisdictional Income Tax Allocation					$ 5,595	$ 3,926
6	Eliminate Inflation of Non-Labor Costs					$ 907	$ 636
7	Eliminate 45% of Short-Term Incentive Expense					$ 355	$ 249
8	**Total**	$1,225,324	$ 74,824	$ 28,348	$1,225,324	$ 67,967	$ 8,556
		% Weight	Cost Rate	Weighted Cost	% Weight	Cost Rate	Weighted Cost
	Capital Structure						
9	Long Term Debt	41.75%	4.69%	1.96%	40.63%	4.69%	1.91%
10	Short Term Debt	3.70%	1.98%	0.07%	7.78%	1.98%	0.15%
11	Preferred Stock	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
12	Common Equity	54.55%	10.45%	5.70%	51.58%	9.60%	4.95%
13	Proposed ROR			7.73%			6.86%
14	Tax Gross-Up Factor	1.4250			1.4250		

1/ Does not address interest synchronization

Attachment A: Resume of Bruce R. Oliver
Case No. 9651

BRUCE R. OLIVER

Revilo Hill Associates, Inc.
7103 Laketree Drive
Fairfax Station, Virginia 22039
(703) 569-6480

EXPERIENCE

Over 40 years of experience specializing in the areas of utility rates, energy, and regulatory policy. Offers unusual depth and breadth in his understanding of energy and utility industries which leads to creative and effective resolution of rate issues. Has presented expert testimony in regulatory proceedings in more than 300 proceedings before regulatory commissions in 24 jurisdictions, and has served a diverse group of clients on issues encompassing a wide range of energy and utility-related activities. Assists clients in the assessment of competitive energy markets for retail services and in the negotiation of contracts for the purchase of such services. Clients have included commercial and industrial energy users, hospitals and universities, state regulatory commissions, utilities, consumer advocates, municipal governments, federal agencies, and suppliers of equipment and services to utility markets.

1985-Present — Revilo Hill Associates, Inc.
President and CEO

Directs the firm's consulting practice, with specialization in the areas of industrial economics, energy, utilities and regulatory policy. Provides expert testimony in regulatory proceedings. Assists individual commercial and institutional customers in the competitive procurement of energy services and resolution of utility service and billing issues. Regulatory work includes participation in electric, gas, water and sewer utility rate and policy matters, with particular specialization in the areas of utility costs of service, rate structure, rate of return, utility planning, and forecasting. Examples of recent projects include:

- Development and presentation of positions regarding the merits of various forms of alternative ratemaking including, but not limited to: multi-year rate plans; performance-based ratemaking concepts; and the merits of proposals for Performance Incentive Mechanisms.

- Assessment of a gas distribution utility's plans for accelerated replacement of aging and leak prone distribution mains by an LDC, as well as the impacts of rising leak rates the utility's gas system safety and rates distribution services.

- Negotiation of settlements to reflect the impacts of the Tax Cut and Jobs Act of 2017 in rates for certain electric and gas distribution utilities.

- Investigation of utility merger issues including ring-fencing, costs to achieve, estimated merger benefits, and allocation of merger benefits among customers for electric and gas utility mergers.

- Investigation of gas distribution utility system expansion proposals, tariff changes, and proposed ratemaking treatment of costs for gas expansion activities.

- Examination of utility proposals undergrounding overhead electric distribution facilities and the recovery of costs for undergrounding activities.

- Evaluation of utility proposals for the deployment of Advanced Metering Infrastructure (AMI) and the development of dynamic pricing rates to be implemented using AMI equipment.

- Detailed evaluation of a gas distribution utility's long-range gas supply planning, its evaluation of gas supply alternatives, and the prudence of gas its procurement decisions.

- Investigation of cost of service, rate design, tariff, forecasting and planning issues for island utilities in the U.S. Virgin Islands and Guam.

- Analysis of utility revenue decoupling proposals including assessment of the cost of service and rate impacts of such proposals and the development of appropriate tariff language for such proposals.

- Investigation of matters relating to a utility's outsourcing of significant components of its Administrative and General and Customer Service activities, including the merits of the proposed outsourcing arrangements and appropriate rate treatment of costs incurred to: select providers of outsourced services; negotiate contracts; and achieve the implementation of outsourcing arrangements.

- Strategic analysis and policy guidance for a major commercial consumer group in the development and presentation of positions before legislative and regulatory bodies regarding electric and gas regulatory issues.

- Development of Asset Management incentive programs for natural gas distribution utilities.

- Investigation and preparation of a report on the causes of large heating oil price increases for the Attorney General of a New England state.

- Participation as a member of a three-person panel hearing a gas marketer complaint of anti-competitive behavior by a local gas distribution utility in its provision of unbundled gas transportation services.

- Preparation of cost allocation studies and rate structure proposals for electric, gas, water and wastewater utility regulatory proceedings;

- Analysis of proposals for restructuring and the unbundling of rates for local gas distribution companies, and negotiated terms, conditions, and pricing for restructured utility services.

2000-Present AOBA Alliance, Inc.
Director and Chief Economist

Key technical advisor to one of the nation's largest and most successful customer-based energy aggregation programs. Assists non-residential customers in the Washington, D.C. area in the procurement of competitive retail energy services, including the evaluation and negotiation of contract terms for competitive electricity, natural gas, energy information services. Monitors energy markets and keeps participants informed regarding energy market developments and pricing trends. Focused primarily on the commercial building industry, the AOBA Alliance, Inc. serves more than 9,000 electric and natural gas accounts in twelve states and the District of Columbia. Those participants use over 3.0 billion kWh per year and over 660 MW of electrical peak load.

1981-85 Resource Dynamics Corporation
Principal and Vice President

Responsible for the firm's activities in the areas of energy pricing, utility rates and regulatory policy. Provided expert testimony before utility regulatory commissions on issues relating to costs of service, rate design, load management, load research, fuel price forecasting, utility costing analyses, and cost allocation methods. Evaluated utility fuel procurement practices, fuel price forecasts, and price forecasting methodologies. Contributed to modeling efforts relating to the estimation of national and regional electric utility load curves and coal market prices. Participated in the development handbooks for cogeneration feasibility assessment.

1980-81 Potomac Electric Power Company
Manager of Rate Research Department

Directed the development of all rate related programs. Supervised the costing, design and analysis of traditional and innovative rates (including time-of-use, load management and cogeneration tariffs). Also was responsible for corporate revenue forecasting activities, as well as the development of marginal and avoided cost studies.

1979-80 Pacific Gas and Electric Company
Rate Experimentation Supervisor

Responsible for design, implementation and analysis of innovative rate programs for both gas and electric service. Developed programs for curtailable service; cogeneration; conservation; residential load cycling; and commercial, industrial, and agricultural time-of- use rates. Directed analyses of time-of-use and lifeline price elasticities and development of marginal and avoided costing methods.

1973-79 ICF Incorporated
Project Manager

Specialized in energy policy and utility regulatory analyses. Performed detailed analysis of U.S. petroleum, natural gas, coal and electric utility industries. Provided expert testimony on utility rate issues. Designed experimental rates for federally funded time-of-use rate and load management programs in North Carolina. Provided technical support to the DOE Regulatory Intervention Program. Contributed to the design and development of the National Coal Model, and prepared forecasts of low sulfur fuel availability for utility markets.

1972-73 U.S. Cost-of-Living Council - Pay Board
Labor Economist

Served in the Office of the Chief Economist. Responsible for macroeconomic analyses of Board decisions, and for the development data systems to support assessments of the impacts of Board decisions and the reporting of aggregate statistics on wage increases granted by the Board.

EDUCATION

1972 M.A., Economics, Virginia Polytechnic Institute and State University

1970 B.A., Economics, Virginia Polytechnic Institute and State University

RATE CASE PARTICIPATION

Alberta, Canada	
Canadian Western Natural Gas	1998 General Rate Application
NOVA Gas Transmission Ltd.	1995 GRA, Phase II
Canadian Western Natural Gas	Core Market Direct Purchase
Northwestern Utilities	Core Market Direct Purchase
TransAlta Utilities Corp.	Load Retention Rate Offering
Alberta Power Ltd.	1993 General Rate Application
Arizona	
Southwest Gas Corporation	Docket No. U-1551-93-272
Sun City Water Company	Docket No. U-1656-91-134
Havasu Water Company	Docket No. U-2013-91-133
Arizona Water Company	Docket No. U-1445-91-227
California	
Pacific Gas & Electric Company	Application No. 58089
Connecticut	
Southern Connecticut Gas Company	Docket No. 89-09-06
Connecticut Light & Power Company	Docket No. 87-07-01
Delaware	
Chesapeake Utilities Corporation	Docket No. 95 - 73
Delmarva Power & Light Company	Docket No. 94 - 141
Delmarva Power & Light Company	Docket No. 94 - 129
Delaware Electric Cooperative	Docket No. 94 - 100
Delmarva Power & Light Company	Docket No. 92 - 85
Delmarva Power & Light Company	Docket No. 92 - 71F
Delaware Electric Cooperative	Docket No. 91 - 37
Delmarva Power & Light Company	Docket No. 91 - 24
Delmarva Power & Light Company	Docket No. 91 - 20
Delmarva Power & Light Company	Docket No. 90 - 31
Delmarva Power & Light Company	Docket No. 90 - 21
Delmarva Power & Light Company	Docket No. 89 - 26
Chesapeake Utilities Corporation	Docket No. 88 - 39F
Delmarva Power & Light Company	Docket No. 88 - 34
Delmarva Power & Light Company	Docket No. 88 - 32, Phase 2
Delmarva Power & Light Company	Docket No. 88 - 32
Delaware Electric Cooperative	Docket No. 87 - 34, Phase 2
Delaware Electric Cooperative	Docket No. 87 - 34
Delmarva Power & Light Company	Docket No. 87 - 9, Phase 5
Delmarva Power & Light Company	Docket No. 87 - 9, Phase 4

Delmarva Power & Light Company	Docket No. 87 - 9, Phase 3
Delmarva Power & Light Company	Docket No. 87 - 9, Phase 2
Delmarva Power & Light Company	Docket No. 87 - 9
Delmarva Power & Light Company	Docket No. 86 - 43
Delmarva Power & Light Company	Docket No. 86 - 24

District of Columbia

Potomac Electric Power Company	Formal Case No. 1156
Potomac Electric Power Company	Formal Case No. 1151
Potomac Electric Power Company	Formal Case No. 1150
Potomac Electric Power Company	Formal Case No. 1145
WGL – AltaGas Merger	Formal Case No. 1142
Potomac Electric Power Company	Formal Case No. 1139
Washington Gas Light Company	Formal Case No. 1137
Potomac Electric Power Company	Formal Case No. 1133
Potomac Electric Power Company	Formal Case No. 1130
Potomac Electric Power Company	Formal Case No. 1121
Exelon – Pepco Merger	Formal Case No. 1119
Potomac Electric Power Company	Formal Case No. 1116
Washington Gas Light Company	Formal Case No. 1115
Potomac Electric Power Company	Formal Case No. 1103
Washington Gas Light Company	Formal Case No. 1093
Potomac Electric Power Company	Formal Case No. 1087
Washington Gas Light Company	Formal Case No. 1079
Potomac Electric Power Company	Formal Case No. 1076
Potomac Electric Power Company	Formal Case No. 1056
Washington Gas Light Company	Formal Case No. 1054
Potomac Electric Power Company	Formal Case No. 1053, Phase II
Potomac Electric Power Company	Formal Case No. 1053
Washington Gas Light Company	Formal Case No. 1016
Potomac Electric Power/Conectiv Merger	Formal Case No. 1002
Washington Gas Light Company	Formal Case No. 989
Potomac Electric Power Company/Baltimore Gas & Electric Company Merger	Formal Case No. 951
Potomac Electric Power Company	Formal Case No. 945
Potomac Electric Power Company	Formal Case No. 939
Washington Gas Light Company	Formal Case No. 934
Washington Gas Light Company	Formal Case No. 922
District of Columbia Natural Gas	Formal Case No. 890
Potomac Electric Power Company	Formal Case No. 889
Potomac Electric Power Company	Formal Case No. 869
District of Columbia Natural Gas	Formal Case No. 845
District of Columbia Natural Gas	Formal Case No. 840
Potomac Electric Power Company	Formal Case No. 834
Potomac Electric Power Company	Formal Case No. 813, Phase II
Potomac Electric Power Company	Formal Case No. 813

Washington Gas Light Company	Formal Case No. 787
Potomac Electric Power Company	Formal Case No. 785
Potomac Electric Power Company	Formal Case No. 759, Phases III
Potomac Electric Power Company	Formal Case No. 759, Phases II
Potomac Electric Power Company	Formal Case No. 759, Phases I
Potomac Electric Power Company	Formal Case No. 758

Guam

Guam Power Authority	Docket No. 11-090, Phase II
Guam Power Authority	Docket No. 11-090
Guam Power Authority	Docket No. 07-010
Guam Power Authority	Docket No. 98-002
Guam Power Authority	Docket No. 96-004
Guam Power Authority	Docket No. 95-001
Guam Power Authority	Docket No. 94-001
Guam Power Authority	Docket No. 92-002
Guam Power Authority	Docket No. 89-002 A,B,C

Illinois

Commonwealth Edison Company	Docket No. 86-0128

Maryland

Washington Gas Light Company	Case No. 9605
Potomac Electric Power Company	Case No. 9602
Washington Gas Light Company	Case No. 9481
WGL – AltaGas Merger	Case No. 9449
Potomac Electric Power Company	Case No. 9443
Washington Gas Light Company	Case No. 9433
Potomac Electric Power Company	Case No. 9418
Exelon – Pepco Merger	Case No. 9361
Potomac Electric Power Company	Case No. 9336
Washington Gas Light Company	Case No. 9335
Washington Gas Light Company	Case No. 9322
Potomac Electric Power Company	Case No. 9311
Potomac Electric Power Company	Case No. 9286
Washington Gas Light Company	Case No. 9267
Potomac Electric Power Company	Case No. 9217
Potomac Electric Power Company	Case No. 9207
Washington Gas Light Company	Case No. 9158
Washington Gas Light Company	Case No. 9104, Phase II
Washington Gas Light Company	Case No. 9104
Potomac Electric Power Company	Case No. 9092, Phase II
Potomac Electric Power Company	Case No. 9092
Standard Offer Service Docket	Case No. 9063
Standard Offer Service Docket	Case No. 9056

Standard Offer Service Docket	Case No. 9037
Potomac Electric Power Company	Case No. 8895
Washington Gas Light Company	Case No. 8991
Washington Gas Light Company	Case No. 8959
Washington Gas Light Company	Case No. 8920, Phase II
Washington Gas Light Company	Case No. 8920
Potomac Electric Power Company	Case No. 8895
Potomac Electric Power Company	Case No. 8890
Potomac Electric Power Company	Case No. 8791
Potomac Electric Power Company	Case No. 8773
Generic Electric Industry Restructuring	Case No. 8738
Potomac Electric Power Company/Baltimore Gas & Electric Company Merger	Case No. 8725
Washington Gas Light Company	Case No. 8545
Potomac Electric Power Company	Case No. 8315
Potomac Electric Power Company	Case No. 8251
Maryland Natural Gas	Case No. 8191
Potomac Electric Power Company	Case No. 8162
Maryland Natural Gas	Case No. 8119
Potomac Electric Power Company	Case No. 8079
Baltimore Gas & Electric Company	Case No. 8070
Maryland Natural Gas	Case No. 8060
Potomac Electric Power Company	Case No. 7972
Potomac Electric Power Company	Case No. 7874
Washington Gas Light Company	Case No. 7649

Massachusetts

Investigation of Rate Structures to Promote Efficient Deployment of Demand Management	Docket No. 07-50

North Carolina

Generic Electric Load Management	Docket No. M100, Sub 78

New Jersey

Public Service Electric and Gas	Docket No. GT93060242
Public Service Electric and Gas	Docket No. ER91111698J
Elizabethtown Gas Company	Docket No. 8812-1231
Elizabethtown Gas Company	Docket No. 8612-1374
Public Service Electric and Gas	Docket No. 8512-1163
Jersey Central Power & Light	Docket No. 8511-1116
New Jersey Natural Gas Company	Docket No. 8510-974
South Jersey Gas Company	Docket No. 850-8858
Public Service Electric and Gas	Docket No. 850-2231
New Jersey Natural Gas Company	Docket No. 850-7732
South Jersey Gas Company	Docket No. 843-184, Phase II
Atlantic Electric Company	Docket No. 8310-883, Phase II

New Jersey Natural Gas Company	Docket No. 831-46
Public Service Electric and Gas	Docket No. 837-620
Public Service Electric and Gas	Docket No. 8210-869

New Mexico

Gas Company of New Mexico	Case No. 2353
Gas Company of New Mexico	Case No. 2340
Gas Company of New Mexico	Case No. 2307
Gas Company of New Mexico	Case No. 2183
Gas Company of New Mexico	Case No. 2147 (Remand)
Gas Company of New Mexico	Case No. 2147
Gas Company of New Mexico	Case No. 2093

New York

Consolidated Edison Company	Docket No. 94-E-0334
Consolidated Edison Company	Docket No. 91-E-0462
Brooklyn Union Gas Company	Docket No. 90-G-0981

Ohio

Toledo Edison Company	Case No. 78-628-EL-FAC

Pennsylvania

PECO Energy Company	Docket No. R-20028394
PG Energy, Inc.	Docket No. R-00061365
Philadelphia Electric Company	Docket No. R-00970258
Mechanicsburg Water Company	Docket No. R-00922502
West Penn Power Company	Docket No. R-00922378
Pennsylvania Electric Company	Docket No. M-920312
North Penn Gas Company	Docket No. R-922276
Metropolitan Edison Company	Docket No. R-922314
York Water Company	Docket No. R-922168
Dauphin Consolidated Water Company	Docket No. R-921000
Pennsylvania Electric Company	Docket No. M-920312
Duquesne Light Company	Docket No. C-913424
Pennsylvania American Water Company	Docket No. R-911909
West Penn Power Company	Docket No. R-901609
Pennsylvania Gas & Water Co. Water Div.	Docket No. R-891209
Pennsylvania Power Company	Docket No. R-881112
Duquesne Light Company	Docket No. R-870651
Pennsylvania Electric Company	Docket No. R-870172
Metropolitan Edison Company	Docket No. R-870171
Western Pennsylvania Water Company	Docket No. R-860397
Duquesne Light Company	Docket No. R-860378
Philadelphia Electric Company	Docket No. R-850290
Pennsylvania Power Company	Docket No. R-850267
Pennsylvania Power & Light Company	Docket No. R-850251

Philadelphia Electric Company	Docket No. R-850152
Western Pennsylvania Water Company	Docket No. R-850096
Pennsylvania Power Company	Docket No. R-842740
Pennsylvania Power & Light Company	Docket No. R-842651
Pennsylvania Electric Company	Docket No. R-832550
Metropolitan Edison Company	Docket No. R-832549
Duquesne Light Company	Docket No. R-842383
UGI Corporation-Gas Utility Division	Docket No. R-832331
Pennsylvania Power & Light Company	Docket No. I-830374
Pennsylvania Electric Company	Docket No. R-822250
Metropolitan Edison Company	Docket No. R-822249
Pennsylvania Power & Light Company	Docket No. R-822169
Pennsylvania Gas & Water Co. - Water Div.	Docket No. R-822102
Columbia Gas Co. of Pennsylvania	Docket No. R-822042
Pennsylvania Gas & Water Co. - Gas Div.	Docket No. R-821961
Philadelphia Electric Company	Docket No. R-811626

Philadelphia, City of

Philadelphia Gas Works	1992 Rate Design Proceeding
Philadelphia Water Department	1992 Rate Increase Request
Philadelphia Gas Works	1990 Rate Increase Request
Philadelphia Water Department	1990 Rate Increase Request
Philadelphia Gas Works	1989 Proceeding
Philadelphia Gas Works	1988 Rate Increase Request
Philadelphia Gas Works	1987-88 Operating Budget
Philadelphia Gas Works	1986 Rate Increase Request
Philadelphia Water Department	1985 Rate Increase Request

Rhode Island – Public Utilities Commission

National Grid – Gas Long-Range Plan	Docket No. 4872
National Grid – Gas GCR	Docket No. 4846
National Grid – Gas DAC	Docket No. 4816
National Grid – Gas Annual ISR Filing	Docket No. 4781
National Grid – Gas Base Rates	Docket No. 4770
National Grid – Gas GCR	Docket No. 4719
National Grid – Gas DAC	Docket No. 4708
National Grid – Gas GCR	Docket No. 4647
National Grid – Gas DAC	Docket No. 4634
National Grid – Gas Long-Range Plan	Docket No. 4608
National Grid – Gas GCR	Docket No. 4576
National Grid – Gas DAC	Docket No. 4573
National Grid – Gas Customer Choice	Docket No. 4523
National Grid – Gas GCR	Docket No. 4520
National Grid – Gas DAC	Docket No. 4514

National Grid – Gas GCR	Docket No. 4436
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Rhode Island – Division of Public Utilities

National Grid Acquisition of New England Gas Company's Rhode Island Assets	Docket No. D-06-13
Merger of Southern Union, Valley Gas Company And Bristol & Warren Gas Company	Docket No. D-00-02

South Dakota

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Federal Energy Regulatory Commission

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Mill River Pipeline, LLC.	Docket No. CP04-41-000
Columbia Gulf Transmission Co.	Docket No. RP86-167-000
Columbia Gas Transmission Corp.	Docket No. RP86-168-000
Columbia Gulf Transmission Co.	Docket No. TC86-021-000

SELECTED REPORTS, PUBLICATIONS AND PRESENTATIONS

"Will Energy Market Developments Drive Government Policy or Will Government Policy Drive Energy Markets," Presentation to AOBA Utility Committee, June 27, 2013.

"Ratemaking for Recovery of Pipeline Safety Investments," Presentation to the National Association of Regulatory Utility Commissioners, February 6, 2013.

"In Comparatively Stable Energy Markets, Legislative and Regulatory Decisions Make Budgeting for Energy Services A Real Challenge," Presentation to AOBA Utility Committee, October 19, 2011.

"Energy Commodities Show Stability; Charges for Utility Services Rise," Presentation to AOBA Utility Committee, April 20, 2011.

"Budgeting for Utilities In the Face of Constantly Changing Rates," Presentation to AOBA Utility Committee, November 10, 2010.

"Electric Utilities Seek Increased Rates to Fund Large Construction Projects," Presentation to AOBA Utility Committee, October 7, 2009.

"Could You Soon Be Paying $1.00 per kWh for Peak Electricity Supply?" Presentation to AOBA Utility Committee, June 24, 2009.

"Energy Markets in a Tailspin," Presentation to AOBA Utility Committee, March 11, 2009.

"Energy price Outlook for 2009," Presentation to AOBA Utility Committee, December 10, 2008.

"Are You 'Going Green' or Going in the Red," Presentation to AOBA Utility Committee, June 18, 2008.

"Understanding Your Utility Costs and Your Competitive Service Options," Presentation to the Mid-Atlantic Hispanic Chamber of Commerce, July 10, 2006.

"Keeping Your Head Above Water In Volatile Electricity And Natural Gas Markets," Presentation to Legum & Norman Managed Condominiums, February 28, 2006.

"Surviving in Deregulated Energy Markets: *What You Don't Know Will Hurt You*!" Presentation to AOBA Legislative & Regulatory Seminar, May, 18, 2006.

"The Utility Market And Deregulation: *What's In It For You*? Presentation to the Montgomery County, Maryland, Apartment Assistance Program, September 29, 2005.

"Winds of Long-Term Change or Another Short-Term Market Distortion: Post-Katrina and Rita Energy Markets," Keynote Presentation to AOBA Leadership Conference, September 28, 2005.

"These Are Not Your Father's Energy Markets," Presentation to the Institute of Real Estate Management, March 8, 2005.

"Understanding Natural Gas Markets," Prepared for the AOBA Alliance, Inc., August 2004.

"Default Service: Protection or Problem," Prepared for the AOBA Alliance, Inc., April 2004.

Assessment of Winter 2000 Heating Oil Price Increases for Rhode Island, Report Prepared for the Rhode Island Department of Attorney General, September 2001 (with P. Roberti).

"Stranded Costs and Stranded Values," Presentation before the Virginia General Assembly, Joint Subcommittee on Electric Industry Restructuring, Task Force on Stranded and Transition Costs, May, 1998.

"Comments Regarding Restructuring of the Electric Industry in Maryland," Presentation before the Maryland Legislative Task Force on Electric Industry Restructuring, December 1997.

Electric Industry Restructuring And Competition In Virginia, Prepared for the Apartment and Office Building Association of Metropolitan Washington, September 1997.

"Assessment of the Proposed Pepco/BGE Merger," Presentation to the District of Columbia Community Forum on Merger Issues, December 1996.

Assessment of the Agreement Between Delmarva Power & Light Company and the Medical Center of Delaware for the Supply of Electrical Power, Prepared for the Delaware Public Service Commission, Docket No. 94-129, December 1994.

Assessment of the Agreement Between Delmarva Power & Light Company and Ciba-Geigy Corporation for the Supply of Limited Volume Natural Gas, Prepared for the Delaware Public Service Commission, Docket No. 94-141, November 1994.

Assessment of the Natural Gas Service Agreement Between Delmarva Power & Light Company and the Medical Center of Delaware, Prepared for the Delaware Public Service Commission, Docket No. 94-129, November 1994.

Lifeline Rates for Electric Service and Their Potential Application to the Guam Power Authority, Prepared for the Public Utilities Commission of Guam, December 1991.

Review of Additional Information Provided by Delmarva Power & Light Company Regarding the Costs of Gas Supply for Hay Road Combined Cycle Generation; prepared for the Delaware Public Service Commission, Docket No. 87-9, Phase V, June 1991.

Evaluation of Delmarva Power & Light Company's Proposed Near-Term Capacity Additions, prepared for the Delaware Public Service Commission, Docket No. 87-9, Phase V, August, 1990.

Evaluation and Recommendations: Delmarva Power & Light Company's Proposed Commercial and Industrial Indoor Lighting Pilot Program, Prepared for the Delaware Public Service Commission, Docket No. 87-9, Phase V, January, 1990.

Preliminary Evaluation of DP&L's Proposed Long Term Purchase of Capacity and Energy from Duquesne Light Company, Prepared for the Delaware Public Service Commission, Docket No. 87-9, Phase IV, January 1990.

Staff Review and Technical Assessment: Challenge 2000 Supply Side Plan, Prepared for the Delaware Public Service Commission, Docket No. 87-9, Phase II, October 1988 (with N.R. Friedman and J. Byrne).

Review and Preliminary Analysis of Rates for the Bordentown Sewerage Authority, Prepared for the Bordentown Citizens' Committee, August 1988.

Evaluation of the Proposed Load Management Program and Accompanying New Rate Schedule R-LM, Prepared for the Delaware Public Service Commission, Docket No. 87-34, January 1988.

Staff Interim Report to the Hearing Examiner, Prepared for the Delaware Public Service Commission, Docket No. 87-9, January 1988, (with J. Byrne, D. Rich, & Y.D. Wang).

Report for the Attorney General of the State of New Mexico: In the Matter of the Application of Gas Company of New Mexico for a Variance to and a Change in General Order No. 44, February 1987 (with R. LeLash and G. Epler).

Determinants of Capital Costs for Coal-Fired Power Plants, prepared for U.S. Energy Information Administration, March 1985 (with J. P. Price and C. J. Koravik).

Trends in Electric Utility Load Duration Curves, prepared for U.S. Energy Information Administration, December 1984. (with J. P. Price)

"Potential 1984 Strike by United Mine Workers of America," Executive Briefing Paper, prepared for U.S. Energy Information Administration, Sept., 1984.

Coal Market Decision - Making: Description and Modeling Implications, prepared for the U.S. Energy Department Information Administration, May 1984 (with J. P. Price).

Power System Load Management Technologies, Energy Department Paper No. 11, World Bank, November 1983 (with J.P. Price).

"Excess Capacity in U.S. Electric Utilities," Geopolitics of Energy, Volume 5, Issue No. 9, September 1983.

Ohio Cogeneration Handbook, prepared for the Ohio Department of Energy, June 1982 (with N. R. Friedman and J. P. Price).

Cogeneration Engineering Handbook, prepared for the California Energy Commission. January 1982 (with N. R. Friedman and J. P. Price).

Third Annual Report: Time of Use Rates for Very Large Customers, Pacific Gas and Electric Company, March 1980 (with R. Levitan).

Residential Peak Load Reduction Program: Implementation Plan, Pacific Gas and Electric Company, January 1980.

"Marginal Cost Adjustment Mechanisms and Rate Design", paper presented to the California Marginal Cost Pricing Project, August 1979.

Effects of Time-of-Day Pricing Under Alternative Assumptions: Three Case Studies, prepared for the U.S. Department of Energy, 1979. (with R. Spann)

Long Run Incremental Cost Analysis and the Development of Time-of-Day Rates for Blue Ridge Electric Membership Corporation, prepared for the North Carolina Utilities Commission, January 1978.

Report on Federally Financed Time-of-Day Rate Experiments for Residential Electric Utility Customers, prepared for the U.S. General Accounting Office, November 1977.

An Empirical Evaluation of the Predatory Theory of Vertical Integration: The Case of Petroleum, (with E. Erickson and R. Spann) prepared for the American Petroleum Institute, October, 1977.

Electric Utility Coal Consumption and Generation Trends, 1976-1985, prepared for the Office of Coal, Federal Energy Administration, October 1976.

Methodology for Improving the Price Sensitivity of the PIES Oil and Gas Supply Curves, prepared for the Federal Energy Administration, February 1976.

Coal Demand for Electricity Generation 1975-1984, prepared for the Office of Coal, Federal Energy Administration, August 1975.

Tanker Requirements for U.S. Waterborne Oil Imports, prepared for the Federal Maritime Administration, September 1973 (with W. Stitt).

Attachment B: Referenced Data Request Responses
Case No. 9651

WG's Response to OPC DR 8-2 in MD PSC Case No. 9605

WG's Response to AOBA DR 4-34 in VA SCC Case No. PUR-2018-00080

MARYLAND PUBLIC SERVICE COMMISSION

WASHINGTON GAS LIGHT COMPANY

CASE NO. 9605 - 2019 MD RATE CASE

WASHINGTON GAS COMPANY RESPONSE
AND/OR NOTICE OF OBJECTION/UNAVAILABILITY
DIRECTED TO THE OFFICE OF PEOPLE'S COUNSEL

OPC DATA REQUEST NO. 8

QUESTION NO. 8-2

Q. Referring to the response to Staff Data Request 2-1, please explain the magnitude of the Labor – Overtime expense in March 2019.

WASHINGTON GAS' RESPONSE **JUNE 14, 2019**

A. Please refer to the record in Case No. 9481. This was explained at length by Company Witness Price. At the evidentiary hearings, that the overtime would be continued to be experienced was explained in a colloquy between Commissioner Herman and I.

SPONSOR: Aaron B. Gibson
Director, Regulatory and Utility Revenue Accounting

WASHINGTON GAS' SUPPLEMENTAL RESPONSE **JUNE 26, 2019**

A. The magnitude of the Labor – Overtime expense in March 2019 was the result of the spike in the Grade 2 backlog caused by an increase of initiated Grade 1 leaks, which caused Washington Gas to declare a catastrophic incident on or about February 14, 2019, as defined in Annex EF of the 2015-2020 Labor Contract between Washington Gas and the International Brotherhood of Teamsters Local 96. Annex EF includes incidents resulting in the activation of mutual aid, which resulted in payment of double time to the Company's union employees who are required to work an extended day during an emergency declared under this Annex. A copy of the 2015-2020 Labor Contract is appended hereto as 9605.OPC DR 8-2 Supplemental Attachment.

SPONSOR: Robert Tuoriniemi
Chief Regulatory Accountant

COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

CASE NO. PUR-2018-00080

WASHINGTON GAS'S RESPONSE TO THE
APARTMENT AND OFFICE BUILDING ASSOCIATION

AOBA DATA REQUEST NO. 4

QUESTION NO. 34

Q. Re: the Direct Testimony of Witness Price at page 18, lines 8-9, please:

a. Provide the Company's best assessment of when the Commission can expect to see a leveling-off or reduction in the "recent trend in odor calls and leaks;"

b. Provide the Company's assessment of what is required to achieve a leveling-off or reduction in the "recent trend in odor calls and leaks;"

c. Provide the Company's assessment of how the "recent trend in odor calls and leaks" will be impacted by the Company's planned pipe replacement activities and the priorities established for pipe replacements.

WASHINGTON GAS'S RESPONSE 12/21/2018

A.

a. The Company has not made a calculation. The ability to make a reliable calculation is affected by uncertainties which include: the effect of the continued aging of company facilities, the impact of its accelerated replacement programs, the increase in customer-driven calls.
b. The replacement of the Company's aging infrastructure is expected to eventually reduce the recent trend.
c. See response to 34 a. and b., above.

SPONSOR: Stephen J. Price
Assistant Vice President – Safety, Quality and System Protection

AOBA ___ (TBO)

Before the

PUBLIC SERVICE COMMISSION
OF THE
STATE OF MARYLAND

IN THE MATTER OF	)	
	)	
The Application of Washington Gas	)	
Light Company for Authority to Increase	)	**Case No. 9651**
Its Existing Rates and Charges and to	)	
Revise Its Terms and Conditions for	)	
Gas Service	)	

VOLUME II OF II: DIRECT TESTIMONY OF AOBA WITNESS TIMOTHY B. OLIVER

November 20, 2020

Apartment and Office Building Association
of Metropolitan Washington
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DIRECT TESTIMONY OF TIMOTHY B. OLIVER
MDPSC Case No. 9651

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

A. My name is Timothy B. Oliver. My business address is 7103 Laketree Drive Fairfax Station, Virginia, 22039.

Q. BY WHOM AND IN WHAT CAPACITY ARE YOU EMPLOYED?

A. I am employed by Revilo Hill Associates, Inc., I serve as Vice President and Senior Rate Analyst for the firm.

Q. ON WHOSE BEHALF DO YOU APPEAR IN THIS PROCEEDING?

A. I am appearing on behalf of the Apartment and Office Building Association of Metropolitan Washington (“AOBA”).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. My testimony in this proceeding addresses issues relating to the application of Washington Gas Light Company (“Washington Gas”, "WG", or "the Company") for authority to increase its existing rates and charges for gas service. This testimony responds to portions of the pre-filed direct testimony and schedules sponsored by WG witnesses D’Ascendis and Wagner in this proceeding.

Q. PLEASE SUMMARIZE YOUR EXPERIENCE AND QUALIFICATIONS.

A. I have been employed by Revilo Hill Associates, Inc. since 2002. In 2005, I began working with Revilo Hill Associates on a full-time basis. During my employment I have assisted in the preparation of a wide range of energy and utility analyses addressing such topics as: estimation of utility ROE requirements, utility class cost of service allocations, rate design analyses, fuel oil pricing, assessment of issues associated with the sighting of proposed LNG facilities, investigation of metering and billing disputes for large building owners, examination of the economics of competitive energy supply alternatives for commercial, governmental, and institutional customers, and evaluation of energy efficiency opportunities in master metered apartment buildings. I have also prepared, or assisted in the preparation of utility rate case analyses for more than sixty utility electric, gas, and water proceedings in the following regulatory jurisdictions: The District of Columbia, Maryland, Virginia, Massachusetts, Rhode Island, Guam, and the Virgin Islands.

I also have a Master's of Science degree in the field of Global Energy Management from the University of Colorado Denver Business School. That program included courses in Regulatory Accounting, Corporate Finance, Energy Economics, Energy Law and Policy, Asset Management, and Strategic Planning. I also have a Bachelor's of Science degree in Chemistry from the College of William and Mary. Additionally, I have taken the Certified Energy Manager ("CEM") course offered by the Association of Energy Engineers and passed the exam for that certification.

Q. HAVE YOU PREVIOUSLY APPEARED BEFORE THIS COMMISSION?

A. Yes, I have. I appeared before this Commission in Case Nos. 9605, 9602, 9481, 9472, 9449, 9443, 9418, 9336, and 9335. In those proceedings I have addressed issues including: capital structure, rate of return, return on equity, merger costs to achieve and synergy savings, cost of service, revenue distribution, rate design, and tariff proposals.

Q. HAVE YOU TESTIFIED BEFORE ANY OTHER UTILITY REGULATORY COMMISSIONS?

A. Yes, I have previously submitted testimony before the Virginia State Corporation Commission, the District of Columbia Public Service Commission, and the Rhode Island Public Utilities Commission.

Q. WAS THIS TESTIMONY PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION AND CONTROL?

A. Yes, it was.

II. SUMMARY

Q. PLEASE SUMMARIZE THE KEY ELEMENTS OF YOUR FINDINGS WITH RESPECT TO THE COMPANY'S PROPOSALS IN THIS PROCEEDING.

A. Key findings from my review of Washington Gas' filing in this proceeding include the following:

Cost of Equity

- Washington Gas' requested 10.45% ROE is an increase of 75 basis points from the currently authorized ROE and does not comport with the Commission's previously annunciated policy regarding gradualism in the adjustment or utility ROE's.

- WG's ROE request overstates WG's equity return requirements for its gas distribution utility operations in the State of Maryland.

- Witness D'Ascendis' large number and wide range of ROE estimates provide an unreasonably large degree of latitude in his recommendation.

- It is widely understood that gas distribution utilities are generally less risky than their more diversified holding company parents, and therefore, gas distribution utilities should have lesser equity return requirements than their

parent companies, but WG Witness D'Ascendis fails to recognize this fundamental relationship.

Rate Structure

- The number of interruptible customers served by Washington Gas in Maryland has continued to decline in recent years, and the sharp increases in distribution charges that Washington Gas proposes in this proceeding must be expected to precipitate further reductions in WG's numbers of Maryland interruptible customers.

- The Company's proposed distribution of the requested revenue increase is out of line with the Commission's recent revenue increase distribution determinations, is arbitrary, and lacks transparency.

- The Company's proposed distribution of the requested revenue increase does not provide any final class rate of return results upon which the Commission can evaluate the post increase impacts on class rates of return or movement towards parity.

- The Company's proposed customer charge increases of approximately 5.00% are similar to the increase approved by the Commission in Case No.

9481, and were approved for settlement purposes in Case No. 9605 but are not cost-based or quantitatively supported.

- The Company's presentation of bill comparisons for purposes of illustrating the impacts from the Company's proposed rates only shows impacts that include the Montgomery County Fuel Energy Tax, understating the impacts for non-Montgomery County customers.

Q. WHAT ACTIONS DO YOU RECOMMEND THE COMMISSION TAKE WITH RESPECT TO THE COMPANY'S FILING IN THIS PROCEEDING?

A. Based on the findings in this presentation, I recommend that this Commission take the following actions:

1. The Commission should find that the ROE proposed by the Company does not conform to the Commission's determination in Case No. 9443 pertaining to gradualism as it applies to the adjustment of utility ROE's.

2. The Commission should find that there is market-based support for a downward adjustment to the Company's current ROE.

3. The Company's proposed distribution for a revenue increase should be rejected.

4. The proposed two-step revenue increase distribution methodology advocated by AOBA in this testimony is based on Commission precedent and should be accepted in this proceeding.

5. The Commission should accept the results of the proposed revenue increase distribution in this testimony that have been applied to AOBA's recommended revenue increase.

6. The Commission should adopt the rates and charges by rate schedule proposed in this testimony.

7. In the next base rate case the Commission should direct the Company to provide bill comparisons that only include the proposed distribution charges and exclude energy charges and pass-through taxes that this Commission does not regulate.

III. DISCUSSION OF ISSUES

Q. HOW IS YOUR DISCUSSION OF ISSUES RELATING TO THE COMPANY'S FILING IN THIS PROCEEDING ORGANIZED?

A. My testimony addresses two sections of the Company's Application: (A) AOBA's return on equity estimation; and (B) Rate Structure. Section B has two subparts: (1) Revenue Increase Distribution and (2) Rate Design.

A. AOBA's Return on Equity Analysis

Q. DO YOU HAVE ANY GENERAL OBSERVATIONS REGARDING THE ROE ANALYSES THAT WASHINGTON GAS HAS SUBMITTED IN THIS PROCEEDING IN SUPPORT OF ITS REVENUE INCREASE?

A. I do. With respect to the Company's ROE, Washington Gas asks for the Commission's approval of a **10.45%** return on equity. That request is based on the Direct Testimony of WG Witness D'Ascendis who concludes that the Company's ROE should fall within a range of 10.20% to 10.70% and recommends that the authorized ROE for Washington Gas be set at the mid-point of that range.[1] Witness D'Ascendis' recommendation represents a dramatic **75 basis points** increase over the 9.70% ROE level that this Commission approved for settlement purposes in Washington Gas Case No. 9605 and reflects no consideration of gradualism in the adjustment of authorized ROEs.

The Company's requested **10.45%** ROE is 125 basis points above the 9.20% authorized ROE established for Washington Gas in the Company's most recent base rate case in Virginia that was decided on December 20, 2019.[2]

[1] Ibid.
[2] Virginia State Corporation Commission, Case No. PUR-2018-00080, FINAL ORDER, dated December 20, 2019, page 25.

Furthermore, it is 120 basis points above WG's current authorized ROE in the District of Columbia. Considering that interest rates have fallen and the risk free cost of debt (as suggested by the yields on 30-Year U.S. Treasury bonds) have fallen to near zero, the dramatic increase that WG seeks in its authorized ROE in this proceeding would be unconscionable, even without consideration of Covid-19 impacts on Maryland's residents and businesses. Moreover, given the Company's failure to stem the rapid growth in hazardous leaks on its Maryland distribution system, an increase in the equity return for WG's sole shareholder, AltaGas, would appear to reward the Company for its less than stellar performance with respect to pipe replacement and safety.

Q. DO YOU CONTEST THE REASONABLENESS OF THE PROXY GROUP THAT WG WITNESS D'ASCENDIS USES IN HIS COST OF EQUITY ANALYSES?

A. Given that mergers and acquisitions have effectively eliminated market information regarding the cost of equity for independent gas distribution utilities, the proxy group of primarily holding companies that Witness D'Ascendis employs may have to suffice as a starting point for an assessment of gas distribution utility ROE requirements. But, that does not justify a presumption that the risks and equity return requirements for the holding companies included in Witness D'Ascendis proxy group are comparable to, and/or reasonably representative of, the risks and return requirements of Washington Gas' distribution utility operations in Maryland.

Witness D'Ascendis' proxy group comprises utility holding companies with investment portfolios that often include significant non-utility and non-price regulated business activities. It is widely understood that gas distribution utilities typically have lesser risk and lower equity return requirements than their parent companies. Thus, reliance on Witness D'Ascendis proxy group results without a downward adjustment for the lesser risk of WG's distribution utility operations necessarily overstates Washington Gas' equity return requirements.

Q. WHAT SUPPORT DOES WG OFFER FOR ITS REQUESTED 10.45% COST OF EQUITY?

A. The Company's support for its requested cost of equity is presented in the Direct Testimony of Witness D'Ascendis. Witness D'Ascendis offers cost of equity analyses that are developed using four different approaches to the estimation of the costs of common equity for WG. Those approaches include: (1) a constant growth discounted cash-flow ("DCF") model; (2) a Capital Asset Pricing Model ("CAPM"); (3) Risk Premium (Risk Premium) model; (4) Non-Price Regulated Proxy Group, and (5) a small size adjustment.

Q. SHOULD THE COMMISSION ACCEPT WITNESS D'ASCENDIS' ROE RECOMMENDATION?

A. No. The 10.45% ROE that the witness supports is well above the cost of equity that WG requires for its comparatively low-risk distribution utility operations in the

State of Maryland. Witness D'Ascendis' analyses and rationales do not properly consider the comparative risk of WG's gas distribution utility operations in Maryland. Instead, the witness' recommendation is highly dependent upon results for scenarios that do not reflect costs for comparable risk investments. Despite Witness D'Ascendis' references to *Hope* and *Bluefield,* his cost of equity analyses fail to maintain appropriate focus on the development of cost of equity estimates for comparable risk investments. Although I appreciate the limitations imposed on cost of equity estimation by the shrinking pool of companies in the gas utility industry that might be reasonably characterized as having only distribution operations that would be of comparable risk to the Company's Maryland distribution operations, Witness D'Ascendis analyses do not do enough to ensure that the proxy group is comprised of comparable risks investments.

Q. DOES WG OFFER ANY EVIDENCE THAT THE COMPANIES INCLUDED IN WITNESS D'ASCENDIS' PROXY GROUP HAVE HAD TROUBLE ACCESSING FINANCIAL MARKETS ON REASONABLE TERMS?

A. No. It does not.

Q. ARE THE DATA AND METHODS THAT WITNESS D'ASCENDIS USES TO ESTIMATE THE COST OF EQUITY REASONABLE AND APPROPRIATE?

A. No. Any rate of return recommendation in this proceeding should be reflective of investments of comparable risk to WG's distribution utility operations in the State

of Maryland. Witness D'Ascendis' cost of equity analyses fail to meet that basic threshold requirement. Overall the companies included in the proxy group upon which he relies to develop his DCF, CAPM and ECAPM analyses are noticeably riskier than WG's distribution utility operations. In addition, the CAPM, ECAPM, and Risk Premium analyses Witness D'Ascendis uses include measures of risk premiums that are derived on returns for investments that are not reflective of risk that is comparable to that for WG's distribution utility operations.

The Bloomberg-derived and Value Line-derived Ex-Ante Market Risk Premiums that Witness D'Ascendis uses in his CAPM and ECAPM analyses are premised on an estimate of the average "required market return" for all of the companies included in the S&P 500. However, the S&P 500 companies on average are not reflective of WG's risk characteristics. For example, projected earnings growth rates for the S&P 500 companies are significantly above similar projections for WG, and the dividend yields for the S&P 500 companies are generally well below dividend yields for either WG or the primarily gas distribution utilities included in Witness D'Ascendis' proxy group. Thus, those analyses provide no useful insight to WG's equity return requirements.

Further, Witness D'Ascendis' Bond Yield Plus Risk Premium analysis relies on a generalized assessment of the market risk premium. That generalized assessment of a market risk premium is not limited to, or intended to portray, a risk premium for investments that embody risk comparable to that for WG.

Thus, the inputs to Witness D'Ascendis' CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses are inconsistent with one of the basic tenants of the Court's *Hope* and *Bluefield* decisions that Witness D'Ascendis cites at page 17 of his Direct Testimony, and the results of those analyses should be given little, if any, weight. Witness D'Ascendis makes no attempt to adjust the results of his estimations to represent the lower risk of WG's lower risk utility operations.

Q. SHOULD THE COMMISSION GIVE ANY WEIGHT TO THE SMALL SIZE ADJUSTMENT PROPOSED BY WITNESS D'ASCENDIS?

A. No. This adjustment is inappropriate and unnecessary. The small size adjustment proposed by Witness D'Ascendis has no relevance to Washington Gas Light Company, WGL Holdings, or AltaGas Ltd. In the recently decided Washington Gas rate case in Virginia (PUR-2018-00080) the Company's ROE witness also proposed a small size adjustment. The only supporting documentation offered by Witness D'Ascendis in that proceeding included the following:

> *The Small-firm effect is an anomaly in the sense that it is not consistent with the CAPM theory. Still, higher returns reflect a higher cost of capital, so we must conclude that smaller firms do have higher capital costs than otherwise similar larger firms. The manager of a small firm should take this factor into account when estimating his or her firm's cost of equity capital. In general, the cost of equity capital appears to be about four percentage points higher for* ***small firms (those with market values of less than $20 million)*** *than for large, New York Stock Exchange firms with similar risk characteristics. (Emphasis Added)*[3]

[3] See Attachment B to this testimony: Fundamentals of Financial Management (Excerpt)

Clearly, an adjustment to the expected return on equity for small firms relates to firms that have overall market values that are more than three orders of magnitude smaller than Washington Gas Light Company's operations in Maryland. Given the size of WG's utility operations both in Maryland and overall, the notion that a small size adjustment to the Company's ROE is required should be summarily dismissed by this Commission. No size related adjustment is appropriate or reasonable.

Q. PLEASE DESCRIBE THE COST OF EQUITY ANALYSES THAT YOU HAVE DEVELOPED FOR THIS PROCEEDING?

A. In addition to my review of Witness D'Ascendis' cost of equity presentation, my efforts to estimate a ROE for WG in this proceeding include the computation of DCF and CAPM analyses. Those analyses are presented in Schedule (TBO)-1, pages 1 though 4. For my analyses I have used the same proxy group chosen by Witness D'Ascendis, noting the inherent upward bias in ROE estimates that a proxy group dominated by utility holding companies can be expected to yield for a gas distribution utility such as WG.[4]

[4] As a result of recent mergers and acquisitions, few alternatives remain for the construction of gas utility proxy groups. t

Q. HOW ARE YOUR DCF ANALYSES PRESENTED?

A. The detail of my DCF analysis is presented on page 2 of Schedule (TBO)-1. That analysis employs annual high and low stock price data and earnings growth projections from Zacks, CNN, and Yahoo in a traditional Constant Growth DCF model. Overall proxy group DCF results are summarized for each source of earnings growth estimates on page 1, lines 1-4, of Schedule (TBO)-1. Because no explicit adjustment is made to account for the reduced risk of a distribution utility from that of a holding company the results of the DCF should be viewed as an upper bound for an appropriate return of equity for a distribution utility such as Washington Gas Light Company.

Q. WHAT IS AN APPROPRIATE RISK-FREE RATE FOR USE IN ROE DETERMINATIONS FOR THIS PROCEEDING?

A. The risk-free rate used to estimate the required ROE for Washington Gas' Distribution Utility operations should be based on recent actual 30-year treasury rates. Due to the current environment of extremely low 30-Year Treasury rates I have elected to utilize both the 2020 peak rate and the average rate for the month of June 2020. The peak 2020 30-year Treasury rate, as of June 29, 2020 is 2.38%. The average 30-year Treasury for the month of October 2020 is 1.57%.

Q. WHAT MEASURES FOR RISK PREMIUMS WERE UTILIZED IN THE DEVELOPENT OF YOUR CAPM ANALYSIS?

A. My CAPM analysis compensates for the lack of market data on which the assessment of differences in risk and return requirements between Washington Gas and the proxy group and/or between Washington Gas and the general market are absent. In the absence of publicly traded Washington Gas stock, differences in risk associated with stock price volatility are not observable. Witness D'Ascendis attempts to avoid addressing this problem by assuming that the risk of his proxy group companies provide an appropriate differentiation from the general market through the use of Beta coefficients, but the proxy group risk is not the same as Washington Gas' risk. I take a different approach, recognizing that appropriate Beta coefficients and/or other market-based measures of risk cannot be computed for a company that does not have publicly traded stock, I elected to account for such risk differentials through adjustments to the assumed risk premiums.

Q. WHAT IS THE BASIS FOR THE 8.85% ROE THAT YOU ESTIMATE HEREIN?

A. My presentation of AOBA's ROE recommendation for WG is supported by the analyses presented in Schedule TBO-1. Schedule TBO-1, page 1 summarizes those analyses and presents AOBA's ROE recommendation. Schedule TBO-1, pages 2 through 4 presents AOBA's ROE analyses utilizing the same proxy group as the Company. The average of AOBA's DCF results is 8.93%. The average of AOBA's CAPM results is 8.78%. The results of AOBA's cost of equity analyses combined is 8.85%.

Even when the Company's currently authorized ROE is included in the results of my analyses, the average of the above ROE determinations produces a rounded result of 9.30%. This clearly supports a downward adjustment to the Company's current 9.70% ROE.

B. RATE STRUCTURE

Q. WHAT ARE THE PRIMARY OBJECTIVES OF UTILITY REVENUE INCREASE DISTRIBUTION AND RATE DESIGN DETERMINATIONS?

A. The development of rates for a gas utility typically has four primary objectives. Those are: (a) the recovery of a specified level of revenue (i.e., the authorized revenue requirement); (b) distribution of rate burdens among classes and customers within rate classes in a fair and equitable manner; (c) avoidance of rate shock through applications of the principles of gradualism and continuity in ratemaking policy; and (d) the provision of price signals to customers to encourage certain behavioral responses (e.g., more efficient utilization of resources). These four considerations must be balanced. At times, putting less emphasis on one objective and more on another, to achieve a more equitable overall result is a core function of the Commission.

Q. WHAT HAVE YOU RELIED ON IN THE DEVELOPMENT OF THE REVENUE DISTRIBUTION, RATE DESIGN, AND ASSOCIATED COMPARISONS?

A. I have relied upon the CCOSS results that are presented in Schedule ABG-5.

1. Revenue Increase Distribution

Q. HOW DOES WG PROPOSE TO DISTRIBUTE ITS REQUESTED REVENUE INCREASE AMONG RATE CLASSES?

A. WG's proposed distribution of its revenue increase among rate classes is shown in Schedule JBW-1, Schedule C, page 2 of 2, lines 5 and 12.

It should be noted that the percentage increases that Witness Wagner shows in Schedule JBW-1, Schedule C, page 1 of 2, Column H, represent increases that include several additional revenue items that are not included in the "Base Rate Revenue at Current Rates" that he uses as the basis for his revenue distribution on page 2 of the same schedule. The revenue increase amounts by class are also different on pages 1 and 2 of Schedule C. Inconsistencies such as this plague the schedules presented by Witness Wagner undermining the Company's presentation. Accordingly, the Commission should temper the confidence it places in the Company's proposed revenue allocation and rate designs.

The items included in Witness Wagner's presentation are revenues for the: Non-tariff Delivery Customers, RES Amount, GRT Surcharge, Firm Credit Adjustment, Franchise Tax, and Montgomery County Fuel Energy Tax. These additions serve to dampen the Company's portrayed impacts of the requested increase in distribution revenue for all classes. As shown in Schedule TBO-2, page 2, the actual distribution revenue increase requested by the Company for all classes is 9.23% not the 7.82% presented by Witness Wagner. Additionally, the

inclusion of items such as the Montgomery County Fuel Energy Tax is not appropriate because it is not applicable to all of Washington Gas' customers.

Q. WHAT IS YOUR ASSESSMENT OF THE COMPANY'S PROPOSED REVENUE INCREASE DISTRIBUTION?

A. Witness Wagner's interpretation of the Commission's preferred 2-step allocation method is out of line with the Commission's recent revenue increase allocation determinations and lacks transparency. Further, the Company's proposal does not provide any results upon which the Commission can evaluate the post-increase impacts on class rates of return or movement toward parity. These shortcomings render the Company's proposed revenue increase distribution unusable by this Commission for ratemaking purposes.

Q. HOW DOES THE COMMISSION DESCRIBE THE TWO-STEP REVENUE DISTRIBUTION METHOD IN ORDER NO. 85028?

A. In Order No. 85028, the Commission outlines a two-step revenue distribution method as follows:

> *First*, a portion of the increase is allocated to under-earning rate classes to move their rates of return or URORs closer to the system average. In the *second* step, the remainder of any increase is apportioned to all customer classes based upon the proportion of their class revenues compared to overall system revenues. Sometimes certain over-earning classes are excluded from step two of the process if their UROR is significantly greater than average. This process permits us to gradually move all classes closer to the system average rate of return or a UROR of one, while tempering

> rate increases. Moreover, it permits us to act in a flexible manner consistent with the specific record in each case. *Finally*, this two-step process avoids placing inflexible limits in the rate setting process.[5]

Q. HOW DOES THE COMMISSION DESCRIBE THE TWO-STEP REVENUE DISTRIBUTION METHOD IN ORDER NO. 88844?

A. In Order No. 88844, the Commission outlines a two-step revenue distribution method that is even more specific and is as follows:

> a) Step One
>
> The Commission concludes that a first-step allocation of 15% to the two customer classes with a current UROR below 1.0 — RES Heat/Cool and Interruptible customers - represents a fair balance between the policies discussed above.
>
> b) Step Two
>
> The remaining 85% of the awarded revenue requirement increase should be allocated to all classes, except "C&I Non-Heat/Non-Cool" and "GMA Non-Heat/Non- Cool" as these classes are significantly over-earning.[6]

These two descriptions of the Commission's two-step methodology serve to guide AOBA's revenue distribution methodology. One notable change is that the Company's CCOSS indicates that the "C&I Non-Heat/Non-Cool" has rates of return well above the system average and should thus be exempted from any distribution revenue increase.

[5] Order No. 85028 at page 125.
[6] Order No. 88844 at page 126.

Q. WHAT IS YOUR RECOMMENDATION FOR HOW THE DISTRIBUTION OF REVENUE REQUIREMENTS AMONG RATE CLASSES SHOULD BE PERFORMED IN THIS CASE?

A. The distribution of revenue requirements among classes that I propose is similar in structure and methodology to my proposal presented in Case No. 9481. That proposal conforms to the Commission's recent determinations and adheres to the two-step methodology as described in Case No. 9286, Order No. 85028 and Case No. 9481, Order No. 88844. In the first step of the two-step method, 15% of the revenue increase is applied to classes with rates of return below the system average on the relative proportion of current distribution revenue. The Residential Heating and the Interruptible classes meet this criterion and are included in this first step. In the second step of the two-step, method 85% of the revenue increase is applied to all classes on the relative proportion of current distribution revenue. The results of this revenue distribution methodology are presented in Schedule TBO-2, page 1.

Q. WHAT IS AOBA'S RECOMMENDED OVERALL REVENUE INCREASE FOR WG IN THIS PROCEEDING?

A. AOBA's recommended revenue increase in this proceeding is presented in the Direct Testimony of AOBA Witness Bruce Oliver. The revenue requirements adjustments, which if subtracted from the Company's initial rate increase request

with no other adjustments, would yield a revenue increase for WG of $8.6 million.[7] I have prepared a revenue increase distribution using my recommended revenue increase distribution methodology that produces an overall increase of 2.75%.

Q. WHAT IS AOBA'S PROPOSED DISTRIBUTION OF AOBA'S RECOMMENDED OVERALL REVENUE INCREASE FOR WG?

A. AOBA's proposed revenue distribution is explained above and detailed in Schedule TBO-2, page 1. A summary is shown in the following table:

AOBA Proposed Revenue Increase by Rate Class

Rate Class	Revenues	% Increase
Residential		
Heating/Cooling	$6,231,839	2.94%
Non-Heating Other	$28,557	2.37%
Commercial & Industrial		
Heating/Cooling < 3,000	$262,703	2.37%
Heating/Cooling > 3,000	$1,211,099	2.37%
Non-Heating/Non-Cooling	$0	0.0%
Group Metered Apartments		
Heating/Cooling < 3,000	$346,670	2.37%
Non-Heating/Non-Cooling	$52,428	2.37%
Interruptible	$288,705	2.94%
Total	$8,422,001	2.75%

[7] Case No. 9651 Direct Testimony of B. Oliver, page 52.

2. Rate Design

Q. HAVE YOU REVIEWED THE RATE DESIGN AND TARIFF CHANGE PROPOSALS THAT WITNESS WAGNER PRESENTS?

A. Yes. I have examined those proposed rate designs, as well as the Company's responses to a number of data requests relating to those proposals.

Q. HOW DOES WG PROPOSE TO ALTER ITS RATE DESIGNS FOR NON-RESIDENTIAL SERVICE CLASSES?

A. The Company's proposal to adjust the applicable charges for Non-Residential Service customers is presented in Schedule TBO-4, page 2 of 2.

Q. DO YOU SUPPORT THE CHANGES THE COMPANY PROPOSES IN THE CUSTOMER CHARGE COMPONENT?

A. In part, yes. WG's proposed change to the customer charge is similar to what the Commission recently outlined in Case No. 9481. With that in mind, an increase of 5% to the customer component, with my recommended revenue increase distribution, produces reasonable results for all classes.

Q. DO YOU SUPPORT THE CHANGES THE COMPANY PROPOSES IN THE DISTRIBUTION CHARGE COMPONENTS?

A. In part, yes. The Company's proposed increase to the distribution component is reasonable in methodology but the differences in the increase applied to each rate

block are de minimis and unnecessary. For those reasons, I support an equal percentage increase to each rate block in the same manner as the Company proposes for the Residential Service classes.

Q. HOW DOES AOBA PROPOSE TO DESIGN RATES?

A. AOBA has developed a rate design for the Non-Residential classes of service. AOBA's proposed rate designs preliminarily utilize the Company's proposed approximately 5% increase to the customer charge. The proposed rate designs recover the remaining revenue requirement through the distribution charges increasing each rate block by the same percentage increase for the class. These rates based upon AOBA's recommended revenue increase and distribution produces results that are reasonable and should be approved by this Commission The results and proof of revenue for each rate schedule is set forth in Schedule TBO-3 and a summary of the proposed rates is provided in Schedule TBO-4.

Q. WHAT ISSUES DO YOU HAVE WITH WG'S PRESENTATION OF ITS BILL IMPACT COMPARISONS IN SCHEDULE JBW-2, SCHEDULE A?

A. The Montgomery Country Fuel Energy Tax is significant and when included in the bill comparisons serves to mask the actual increase that can be expected for Washington Gas' customers outside of the county. For this reason, bill comparisons applicable for each county served in Maryland would improve the accuracy of the bill comparisons and hence their value in base rate proceedings.

Furthermore, recently in Case No. 9602 the July 9, 2019 Proposed Order of Public Utility Law Judge ("POPULJ") directed Pepco to provide bill comparisons that shall only include the proposed distribution charges and exclude energy charges and all associated taxes in its next rate case. The POPULJ also stated *"I agree with AOBA that presenting comparisons based upon customers in Montgomery County, which has a larger fuel tax than Prince George's County, could be misleading."*[8] It should be noted that Pepco in Case No. 9655 provided bill impacts for each county it serves.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes. It does.

[8] Case No. 9602, POPULJ, page 149, July 9, 2019.

Washington Gas Light Company

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Cost of Equity Analysis

Ln No	Analytic Model	Average Dividend Yield	Dividend Growth Component	Adjusted Dividend Yield	Earnings Growth Rate	Indicated Rate of Return
	DCF Cost of Equity					
1	Zacks	3.16%	0.08%	3.25%	5.27%	8.52%
2	CNN	3.16%	0.09%	3.26%	5.96%	9.21%
3	Yahoo	3.16%	0.09%	3.25%	5.79%	9.04%
4	**Average of DCF Results**					**8.93%**
				Based on 2020 Peak Treasury Rate	**October 2020 Average Treasury Rate**	**Average**
	CAPM Analysis *(Value Line Betas)*					
5	@ 7.00% Adjusted Risk Premium			8.33%	7.52%	7.92%
6	@ 8.00% Adjusted Risk Premium			9.18%	8.92%	9.05%
	CAPM Analysis *(Bloomberg Betas)*					
7	@ 7.00% Adjusted Risk Premium			8.82%	8.00%	8.41%
8	@ 8.00% Adjusted Risk Premium			9.73%	9.73%	9.73%
9	**Average of CAPM Results**					**8.78%**
10	**Average of DCF and CAPM**					**8.85%**
11	**AOBA Analytical Recommendation**					**8.85%**

Washington Gas Light Company
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Dividend Yields & Earnings Growth Data for Proxy Group Companies

Ln No	Proxy Group Company	Ticker Symbol	Market Price Per Share 1/ High	Low	Average	Indicated Dividend Per Share 1/	Dividend Yield	Projected 5-Year Earnings Growth Zacks 2/	CNN 3/	Yahoo 4/
1	Atmos Energy Corp.	**ATO**	$ 121.08	$ 77.91	$ 99.50	$ 2.30	2.31%	7.24%	7.48%	7.25%
2	New Jersey Rescources Corp	**NJR**	$ 45.76	$ 21.14	$ 33.45	$ 1.33	3.98%	6.00%	6.15%	6.00%
3	Northwest Natural Gas Co.	**NWN**	$ 77.26	$ 42.33	$ 59.80	$ 1.92	3.21%	3.12%	3.12%	3.10%
4	ONE Gas, Inc.	**OGS**	$ 96.97	$ 63.67	$ 80.32	$ 2.16	2.69%	5.50%	5.50%	5.00%
5	South Jersey Industires, Inc.	**SJI**	$ 33.43	$ 18.24	$ 25.84	$ 1.18	4.57%	10.44%	10.44%	10.40%
6	Southwest Gas Corp.	**SWX**	$ 81.62	$ 45.68	$ 63.65	$ 2.28	3.58%	5.00%	4.00%	4.00%
7	Spire Inc.	**SR**	$ 87.96	$ 50.58	$ 69.27	$ 2.49	3.59%	4.86%	5.00%	4.78%
8	**Mean**		**$ 77.73**	**$ 45.65**	**$ 61.69**	**$ 1.95**	**3.16%**	**5.27%**	**5.96%**	**5.79%**

1/ From www.Zacks.com 11-10-2020
2/ From www.Zacks.com 11-10-2020
3/ From money.cnn.com 11-10-2020
4/ From www.finance.yahoo.com 11-10-2020

Washington Gas Light Company
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Capital Asset Pricing Model (CAPM) Cost of Equity Estimates
2020 Peak Risk-Free Rate

Ln No	Proxy Group Company	Ticker Symbol	Value Line Betas 1/	Risk Premium 7.00%	Risk-Free Rate 2/ 2.38%	Value Line Betas 1/	Risk Premium 8.00%	Risk-Free Rate 2/ 2.38%
1	Atmos Energy Corp.	**ATO**	0.80	5.60%	7.98%	0.80	6.40%	8.78%
2	New Jersey Rescources Corp	**NJR**	0.90	6.30%	8.68%	0.90	7.20%	9.58%
3	Northwest Natural Gas Co.	**NWN**	0.80	5.60%	7.98%	0.80	6.40%	8.78%
4	ONE Gas, Inc.	**OGS**	0.80	5.60%	7.98%	0.80	6.40%	8.78%
5	South Jersey Industires, Inc.	**SJI**	0.95	6.65%	9.03%	0.95	7.60%	9.98%
6	Southwest Gas Corp.	**SWX**	0.90	6.30%	8.68%	0.90	7.20%	9.58%
7	Spire Inc.	**SR**	0.80	5.60%	7.98%	0.80	6.40%	8.78%
8	**Mean**		0.850	5.95%	**8.33%**	0.850	6.80%	**9.18%**

Ln No	Proxy Group Company	Ticker Symbol	Bloomberg Betas 1/	Risk Premium 7.00%	Risk-Free Rate 2/ 2.38%	Bloomberg Betas 1/	Risk Premium 8.00%	Risk-Free Rate 2/ 2.38%
9	Atmos Energy Corp.	**ATO**	0.86	6.02%	8.40%	0.86	6.88%	9.26%
10	New Jersey Rescources Corp	**NJR**	0.90	6.30%	8.68%	0.90	7.20%	9.58%
11	Northwest Natural Gas Co.	**NWN**	0.82	5.74%	8.12%	0.82	6.56%	8.94%
12	ONE Gas, Inc.	**OGS**	0.95	6.62%	9.00%	0.95	7.56%	9.94%
13	South Jersey Industires, Inc.	**SJI**	0.95	6.65%	9.03%	0.95	7.60%	9.98%
14	Southwest Gas Corp.	**SWX**	1.05	7.35%	9.73%	1.05	8.40%	10.78%
15	Spire Inc.	**SR**	0.91	6.37%	8.75%	0.91	7.28%	9.66%
16	**Mean**		0.919	6.44%	**8.82%**	0.919	7.35%	**9.73%**

1/ Exhibit WG (DWD)-4, page 1 of 1
2/ From www.treasury.gov 11-10-2020

Washington Gas Light Company

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Capital Asset Pricing Model (CAPM) Cost of Equity Estimates

With Zacks Betas and October 2020 Average Risk-Free Rate

Ln No	Proxy Group Company	Ticker Symbol	Value Line Betas 1/	Risk Premium 7.00%	Risk-Free Rate 2/ 1.57%	Value Line Betas 1/	Risk Premium 8.00%	Risk-Free Rate 2/ 1.57%
1	Atmos Energy Corp.	**ATO**	0.80	5.60%	7.17%	0.80	6.40%	7.97%
2	New Jersey Rescources Corp	**NJR**	0.90	6.30%	7.87%	0.90	7.20%	8.77%
3	Northwest Natural Gas Co.	**NWN**	0.80	5.60%	7.17%	0.80	6.40%	7.97%
4	ONE Gas, Inc.	**OGS**	0.80	5.60%	7.17%	0.80	6.40%	7.97%
5	South Jersey Industires, Inc.	**SJI**	0.95	6.65%	8.22%	0.95	7.60%	9.17%
6	Southwest Gas Corp.	**SWX**	0.90	6.30%	7.87%	0.90	7.20%	8.77%
7	Spire Inc.	**SR**	0.80	5.60%	7.17%	0.80	6.40%	7.97%
8	**Mean**		0.85	5.95%	**7.52%**	0.85	6.80%	**8.37%**

Ln No	Proxy Group Company	Ticker Symbol	Bloomberg Betas 1/	Risk Premium 7.00%	Risk-Free Rate 2/ 1.57%	Bloomberg Betas 1/	Risk Premium 8.00%	Risk-Free Rate 2/ 1.57%
9	Atmos Energy Corp.	**ATO**	0.86	6.02%	7.59%	0.86	6.88%	8.45%
10	New Jersey Rescources Corp	**NJR**	0.90	6.30%	7.87%	0.90	7.20%	8.77%
11	Northwest Natural Gas Co.	**NWN**	0.82	5.74%	7.31%	0.82	6.56%	8.13%
12	ONE Gas, Inc.	**OGS**	0.95	6.62%	8.18%	0.95	7.56%	9.13%
13	South Jersey Industires, Inc.	**SJI**	0.95	6.65%	8.22%	0.95	7.60%	9.17%
14	Southwest Gas Corp.	**SWX**	1.05	7.35%	8.92%	1.05	8.40%	9.97%
15	Spire Inc.	**SR**	0.91	6.37%	7.94%	0.91	7.28%	8.85%
16	**Mean**		0.919	6.44%	**8.00%**	0.919	7.35%	**8.92%**

1/ From www.Zacks.com 6-30-2020
2/ From www.treasury.gov 6-30-2020
3/ Exhibit WG (2C)-4, page 1 of 1

Washington Gas Light Company
MD PSC Case No. 9651

AOBA Revenue Distribution and Rates *(per Order No. 88844, page 126)*
At AOBA's Revenue Requirement and Adjusted CCOSS Results

Ln No	Description	Reference	Total Maryland	Residential Heat/Cool	Residential Non-Htg/Clg	Commercial & Industrial H/C<3,000	Commercial & Industrial H/C>3,000	Commercial & Industrial Non-Htg/Clg	Group Metered Apartments Heat/Cool	Group Metered Apartments Non-Htg/Clg	Interruptible
1	AOBA Proposed Revenue Increase	Sch TBO-5	$ 8,600,000								
2	Late Payment Revenue Increase	SchB, Pg. 1	$ 178,000								
4	Distribution Revenue Increase	=ln 1 - ln 2	$ 8,422,000								
	Distribution of the Requested Revenue Requirement										
5	Base Rate Revenue at Present Rates	**1/**	$ 305,935,822	$ 211,910,165	$ 1,204,415	$11,079,641	$ 51,078,812	$ 4,013,350	$ 14,620,998	$ 2,211,203	$ 9,817,238
6	Net Operating Income	Sch TBO-6, p2	$ 75,517,777	$ 49,211,908	$ 307,350	$ 3,133,598	$ 14,747,880	$ 1,348,926	$ 4,049,822	$ 613,387	$ 2,104,906
7	Net Rate Base	Sch TBO-6, p2	$1,225,351,951	$ 816,411,761	$ 3,835,282	$44,289,408	$ 219,110,049	$ 13,619,351	$ 61,220,792	$ 7,626,381	$ 59,238,927
8	Class Rates of Return	Sch TBO-6, p2	6.16%	6.03%	8.01%	7.08%	6.73%	9.90%	6.62%	8.04%	3.55%
9	Step 1: Allocation Factor	**2/**	1.0000	0.9557							0.0443
10	Step 1: 15% of Increase	Order Pg. 126	$ 1,263,300	$ 1,207,366							$ 55,934
11	Step 2: Allocation Factor	**2/**	1.0000	0.7019	0.0040	0.0367	0.1692		0.0484	0.0073	0.0325
12	Step 2: 85% of Increase	Order Pg. 126	$ 7,158,700	$ 5,024,473	$ 28,557	$ 262,703	$ 1,211,099		$ 346,670	$ 52,428	$ 232,771
13	**Distribution Revenue Increase**	=ln 10 + ln 12	**$ 8,422,001**	**$ 6,231,839**	**$ 28,557**	**$ 262,703**	**$ 1,211,099**	**$ -**	**$ 346,670**	**$ 52,428**	**$ 288,705**
14	Proposed Revenue	=ln 5 + ln 13	$ 314,357,823	$ 218,142,004	$ 1,232,972	$11,342,344	$ 52,289,911	$ 4,013,350	$ 14,967,668	$ 2,263,631	$ 10,105,943
15	Revenue Increase (%)	=ln 13 / ln 5	2.75%	2.94%	2.37%	2.37%	2.37%	0.00%	2.37%	2.37%	2.94%
16	Percent of System Average Increase		1.00	1.07	0.86	0.86	0.86	-	0.86	0.86	1.07
17	Post Increase Incremental Net Operating Income		$ 6,104,266	$ 4,516,837	$ 20,698	$ 190,407	$ 877,805	$ -	$ 251,266	$ 38,000	$ 209,253
18	Net Operating Income		$ 81,622,043	$ 53,728,745	$ 328,048	$ 3,324,005	$ 15,625,685	$ 1,348,926	$ 4,301,088	$ 651,387	$ 2,314,159
19	Post Increase Rate of Return		6.66%	6.58%	8.55%	7.51%	7.13%	9.90%	7.03%	8.54%	3.91%

Footnotes:

1/ Schedule JBW-1, Schedule B, pages 2-4.

2/ Both Steps of the Revenue Distribution are Allocated on the proportion of Base Rate Revenue at Present Rates (ln 5) for the classes included in each step as described in Order No. 88944, page 126.

Washington Gas Light Company
MD PSC Case No. 9605

Compliance Revenue Distribution Methodology (Order No. 88944, page 126)
At Washington Gas' Proposed Revenue Requirement and CP CCOSS Results

Ln No	Description	Reference	Total Maryland	Residential Heat/Cool	Residential Non-Htg/Clg	Commercial & Industrial H/C<3,000	Commercial & Industrial H/C>3,000	Commercial & Industrial Non-Htg/Clg	Group Metered Apartments Heat/Cool	Group Metered Apartments Non-Htg/Clg	Interruptible
1	WG Proposed Revenue Increase	Sch TBO-5	$ 28,412,000								
2	Late Payment Revenue Increase	SchB, Pg. 1	$ 178,000								
3	Distribution Revenue Increase	=ln 1 - ln 2	$ 28,234,000								
	Distribution of WG's Requested Revenue Requirement										
4	Base Rate Revenue at Present Rates	JBW-1, C, ln 2	$ 305,935,822	$ 211,910,165	$ 1,204,415	$11,079,641	$ 51,078,812	$ 4,013,350	$ 14,620,998	$ 2,211,203	$ 9,817,238
5	Net Operating Income	Sch ABG-5	$ 75,517,777	$ 49,211,908	$ 307,350	$ 3,133,598	$ 14,747,880	$ 1,348,926	$ 4,049,822	$ 613,387	$ 2,104,906
6	Net Rate Base	Sch ABG-5	$1,225,351,951	$ 816,411,761	$ 3,835,282	$44,289,408	$ 219,110,049	$ 13,619,351	$ 61,220,792	$ 7,626,381	$ 59,238,927
7	Class Rates of Return	=ln 6 / ln 7	6.16%	6.03%	8.01%	7.08%	6.73%	9.90%	6.62%	8.04%	3.55%
8	Step 1: Allocation Factor	**2/**	1	0.9557							0.0443
9	Step 1: 15% of Increase	Order Pg. 126	$ 4,235,100	$ 4,047,586							$ 187,514
10	Step 2: Allocation Factor	**2/**	1.0000	0.7019	0.0040	0.0367	0.1692		0.0484	0.0073	0.0325
11	Step 2: 85% of Increase	Order Pg. 126	$ 23,998,900	$ 16,844,095	$ 95,735	$ 880,687	$ 4,060,100		$ 1,162,179	$ 175,762	$ 780,342
12	**Distribution Revenue Increase**	=ln 6 + ln 8	**$ 28,234,001**	**$ 20,891,681**	**$ 95,735**	**$ 880,687**	**$ 4,060,100**	**$ -**	**$ 1,162,179**	**$ 175,762**	**$ 967,856**
13	Proposed Revenue	=ln 4 + ln 9	$ 334,169,823	$ 232,801,846	$ 1,300,150	$11,960,328	$ 55,138,912	$ 4,013,350	$ 15,783,177	$ 2,386,965	$ 10,785,094
14	Revenue Increase (%)	=ln 9 / ln 4	9.23%	9.86%	7.95%	7.95%	7.95%	0.00%	7.95%	7.95%	9.86%
15	Percent of System Average Increase		1.00	1.07	0.86	0.86	0.86	-	0.86	0.86	1.07
16	Post-Increase Incremental Net Oper Income		$ 20,464,004	$ 15,142,290	$ 69,389	$ 638,322	$ 2,942,760	$ -	$ 842,347	$ 127,392	$ 701,502
17	Net Operating Income		$ 95,981,781	$ 64,354,198	$ 376,739	$ 3,771,920	$ 17,690,640	$ 1,348,926	$ 4,892,169	$ 740,779	$ 2,806,408
18	Post-Increase Rate of Return		7.83%	7.88%	9.82%	8.52%	8.07%	9.90%	7.99%	9.71%	4.74%

Footnote:

1/ Schedule JBW-SUP-1, Schedule B, pages 2-4.

2/ Both Steps of the Revenue Distribution are Allocated on the proportion of Base Rate Revenue at Present Rates (ln 5) for the classes included in each step as described in Order No. 88944, page 126.

Washington Gas Light Company
MD PSC Case No. 9605

AOBA Proposed Rate Design - Proof of Revenue
Based on 12 Months Ended March 31, 2019 - Pro Forma

Ln No	Description	Reference	Total Maryland	Residential Heat/Cool	Residential Non-Htg/Clg	Commercial & Industrial H/C<3,000	Commercial & Industrial H/C>3,000	Commercial & Industrial Non-Htg/Clg	Group Metered Apartments Heat/Cool	Group Metered Apartments Non-Htg/Clg	Interruptible
1	AOBA Proposed Revenue Increase	Sch TBO-5	$ 8,600,000								
2	Late Payment Revenue Increase	SchB, Pg. 1	$ 178,000								
4	Distribution Revenue Increase	=ln 1 - ln 2	$ 8,422,000								
3	**Distribution Revenue Increase**	Sch TBO-7,p1,ln13	$ 8,422,001	$ 6,231,839	$ 28,557	$ 262,703	$ 1,211,099	$ -	$ 346,670	$ 52,428	$ 288,705
	Revenue Increase by Rate Component										
4	System Charge Revenue Increase	Sch JBW-1	$ 3,166,592	$ 3,008,848	$ 27,218	$ -	$ -	$ -	$ 71,420	$ 23,471	$ 35,635
5	System Charge Increase (%)			5.00%	5.00%	0.00%	0.00%	5.04%	5.01%	5.00%	15.52%
6	Distribution Charge Revenue Increase	Sch TBO-8	$ 5,255,409	$ 3,222,990	$ 1,339	$ 262,703	$ 1,211,099	$ -	$ 275,250	$ 28,957	$ 253,071
7	Distribution Charge Increase (%)			2.12%	0.20%	3.68%	2.58%	0.00%	2.09%	1.65%	2.64%
	Proof of Revenue										
8	Number of Bills	SchB, Pg. 2-4	5,897,358	5,470,633	49,488	197,271	105,054	20,744	27,469	24,707	1,992
9	System Charge			$ 11.55	$ 11.55	$ 20.00	$ 39.95	$ 15.75	$ 51.90	$ 18.40	$ 126.80
10	**System Charge Revenue**	=ln 8 * ln 9	$ 74,359,278	**$ 63,185,811**	**$ 571,586**	**$ 3,945,420**	**$ 4,196,907**	**$ 326,718**	**$ 1,425,641**	**$ 454,609**	**$ 252,586**
	Normal Weather Firm Therms by Rate Block										
11	Block 1	SchB, Pg. 2-4	252,792,535	160,971,627	802,656	12,061,989	24,818,415	3,512,079	7,308,598	3,838,688	39,478,483
12	Block 2	SchB, Pg. 2-4	379,794,990	169,291,854	660,523	5,316,694	95,231,144	6,933,679	31,213,971	2,382,101	68,765,024
13	Block 3	SchB, Pg. 2-4	85,240,440	28,709,273	219,800	1,022,828	39,251,426	6,645,390	9,343,146	48,577	-
		=Sum(ln 11:13)	717,827,965	358,972,754	1,682,979	18,401,511	159,300,985	17,091,148	47,865,715	6,269,366	108,243,507
	Distribution Charges										
14	Block 1	**1/**		$ 0.5140	$ 0.4708	$ 0.4733	$ 0.4903	$ 0.3183	$ 0.3996	$ 0.3245	$ 0.1362
15	Block 2	**1/**		$ 0.3781	$ 0.3431	$ 0.2795	$ 0.2916	$ 0.2177	$ 0.2766	$ 0.2233	$ 0.0792
16	Block 3	**1/**		$ 0.2862	$ 0.2589	$ 0.1972	$ 0.2076	$ 0.1594	$ 0.2053	$ 0.1661	
	Distribution Revenue by Block										
17	Block 1	=ln 11 * ln 14		$ 82,739,416	$ 377,890	$ 5,708,939	$12,168,469	$ 1,117,895	$ 2,920,516	$ 1,245,654	$ 5,376,969
18	Block 2	=ln 12 * ln 15		$ 64,009,250	$ 226,625	$ 1,486,016	$27,769,402	$ 1,509,462	$ 8,633,784	$ 531,923	$ 5,448,941
19	Block 3	=ln 13 * ln 16		$ 8,216,594	$ 56,906	$ 201,702	$ 8,148,596	$ 1,059,275	$ 1,918,148	$ 8,069	
20	Distribtuion Revenue	=Sum(ln 17:19)		$ 154,965,260	$ 661,422	$ 7,396,657	$48,086,467	$ 3,686,632	$ 13,472,448	$ 1,785,646	$ 10,825,910
21	Correction Factor	Sch TBO-8		1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000
22	**Distribution Revenue**	=ln 20 / ln 21	$ 239,895,284	**$ 154,965,260**	**$ 661,422**	**$ 7,396,657**	**$48,086,467**	**$ 3,686,632**	**$ 13,472,448**	**$ 1,785,646**	**$ 9,840,752**
23	Total Revenue	=ln 10 + ln 22	$ 314,254,562	$ 218,151,071	$ 1,233,008	$11,342,077	$ 52,283,374	$ 4,013,350	$ 14,898,089	$ 2,240,255	$ 10,093,338
24	Revenue Increase (%)	=(ln 23 - ln 3)/ln 3	2.72%	2.95%	2.37%	2.37%	2.36%	0.00%	1.90%	1.31%	2.81%
25	Distribution Revenue Increase From Rates		**$ 8,318,740**	**$ 6,240,906**	**$ 28,593**	**$ 262,436**	**$ 1,204,562**	**$ -**	**$ 277,091**	**$ 29,052**	**$ 276,100**

Source:

1/ System Charge and Distribution Charge Revenue Increases and the resulting rates are found on pages 2-9 of Schedule TBO-3, in Columns G and E respectively.

Washington Gas Light Company

MD PSC Case No. 9651

AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Residential Heating

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 218,142,004							
2	Monthly Customer Charge	5,470,633	$ 11.00	**$ 60,176,963**	$ 0.55	$ 11.55	**$ 63,185,811**	**$ 3,008,848**	5.00%
3	Correction Factor	1							
4	Distribution Charges			**$ 151,733,203**			**$ 154,956,193**	**$ 3,222,990**	2.12%
5	Correction Factor	1.000000000		$ 151,733,203		1.000000	$ 154,965,260		
6	Block 1	160,971,627	$ 0.5033	$ 81,017,020	$ 0.0107	$ 0.5140	$ 82,739,416		2.13%
7	Block 2	169,291,854	$ 0.3702	$ 62,671,844	$ 0.0079	$ 0.3781	$ 64,009,250		2.13%
8	Block 3	28,709,273	$ 0.2802	$ 8,044,338	$ 0.0060	$ 0.2862	$ 8,216,594		2.14%
9	Base Rate Revenue			**$ 211,910,166**			**$ 218,142,004**	**$ 6,231,838**	2.94%

Washington Gas Light Company

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AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Residential Non-Heating

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 1,232,972							
2	Monthly Customer Charge	49,488	$ 11.00	**$ 544,368**	$ 0.55	$ 11.55	**$ 571,586**	**$ 27,218**	5.00%
3	Correction Factor	1							
4	Distribution Charges			**$ 660,047**			**$ 661,386**	**$ 1,339**	0.20%
5	Correction Factor	1.000000000		$ 660,047		1.000000000	$ 661,422		
6	Block 1	802,656	$ 0.4698	$ 377,088	$ 0.0010	$ 0.4708	$ 377,890		0.21%
7	Block 2	660,523	$ 0.3424	$ 226,163	$ 0.0007	$ 0.3431	$ 226,625		0.20%
8	Block 3	219,800	$ 0.2584	$ 56,796	$ 0.0005	$ 0.2589	$ 56,906		0.19%
9	Base Rate Revenue			**$ 1,204,415**			**$ 1,232,972**	**$ 28,557**	2.37%

Washington Gas Light Company

MD PSC Case No. 9651

AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Commercial and Industrial less then 3,075 therms

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 11,342,344							
2	Monthly Customer Charge	197,271	$ 20.00	**$ 3,945,420**	$ -	$ 20.00	**$ 3,945,420**	**$ -**	0.00%
3	Correction Factor	1							
4	Distribution Charges			**$ 7,134,221**			**$ 7,396,924**	**$ 262,703**	3.68%
5	Correction Factor	1.000000000		$ 7,134,221		1.000000000	$ 7,396,657		
6	Block 1	12,061,989	$ 0.4565	$ 5,506,298	$ 0.0168	$ 0.4733	$ 5,708,939		3.68%
7	Block 2	5,316,694	$ 0.2696	$ 1,433,381	$ 0.0099	$ 0.2795	$ 1,486,016		3.67%
8	Block 3	1,022,828	$ 0.1902	$ 194,542	$ 0.0070	$ 0.1972	$ 201,702		3.68%
9	Base Rate Revenue			**$ 11,079,641**			**$ 11,342,344**	**$ 262,703**	2.37%

Washington Gas Light Company

MD PSC Case No. 9651

AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Commercial and Industrial 3,075 therms or More

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 52,289,911							
2	Monthly Customer Charge	105,054	$ 39.95	**$ 4,196,907**	$ -	$ 39.95	**$ 4,196,907**	**$ -**	0.00%
3	Correction Factor	1							
4	Distribution Charges			**$ 46,881,905**			**$ 48,093,004**	**$ 1,211,099**	2.58%
5	Correction Factor	1.000000000		$ 46,881,905		1.000000000	$ 48,086,467		
6	Block 1	24,818,415	$ 0.4780	$ 11,863,202	$ 0.0123	$ 0.4903	$ 12,168,469		2.57%
7	Block 2	95,231,144	$ 0.2843	$ 27,074,214	$ 0.0073	$ 0.2916	$ 27,769,402		2.57%
8	Block 3	39,251,426	$ 0.2024	$ 7,944,489	$ 0.0052	$ 0.2076	$ 8,148,596		2.57%
9	Base Rate Revenue			**$ 51,078,812**			**$ 52,289,911**	**$ 1,211,099**	2.37%

Washington Gas Light Company

MD PSC Case No. 9651

AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Commercial and Industrial Non-Heating/Non-Cooling

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 4,013,350							
2	Monthly Customer Charge	20,744	$ 15.75	**$ 326,718**	$ -	$ 15.75	**$ 326,718**	**$ -**	0.00%
3	Correction Factor	1							
4	Distribution Charges			**$ 3,686,632**			**$ 3,686,632**	**$ -**	0.00%
5	Correction Factor	1.000000000		$ 3,686,632		1.000000000	$ 3,686,632		
6	Block 1	3,512,079	$ 0.3183	$ 1,117,895	$ -	$ 0.3183	$ 1,117,895		0.00%
7	Block 2	6,933,679	$ 0.2177	$ 1,509,462	$ -	$ 0.2177	$ 1,509,462		0.00%
8	Block 3	6,645,390	$ 0.1594	$ 1,059,275	$ -	$ 0.1594	$ 1,059,275		0.00%
9	Base Rate Revenue			**$ 4,013,350**			**$ 4,013,350**	**$ -**	0.00%

Washington Gas Light Company

MD PSC Case No. 9651

AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Group Metered Apartments Heating and Cooling

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 14,967,668							
2	Monthly Customer Charge	27,469	$ 51.90	**$ 1,425,641**	$ 2.60	$ 54.50	**$ 1,497,061**	**$ 71,420**	5.01%
3	Correction Factor	1							
4	Distribution Charges			**$13,195,357**			**$13,470,607**	**$ 275,250**	2.09%
5	Correction Factor	1.000000000		$13,195,357		1.000000000	$13,472,448		
6	Block 1	7,308,598	$ 0.3914	$ 2,860,585	$ 0.0082	$ 0.3996	$ 2,920,516		2.10%
7	Block 2	31,213,971	$ 0.2709	$ 8,455,865	$ 0.0057	$ 0.2766	$ 8,633,784		2.10%
8	Block 3	9,343,146	$ 0.2011	$ 1,878,907	$ 0.0042	$ 0.2053	$ 1,918,148		2.09%
9	Base Rate Revenue			**$14,620,998**			**$14,967,668**	**$ 346,670**	2.37%

Washington Gas Light Company

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AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Group Metered Apartments Non-Heating/Non-Cooling

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 2,263,631							
2	Monthly Customer Charge	24,707	$ 18.40	**$ 454,609**	$ 0.95	$ 19.35	**$ 478,080**	**$ 23,471**	5.00%
3	Correction Factor	1							
4	Distribution Charges			**$ 1,756,594**			**$ 1,785,551**	**$ 28,957**	1.65%
5	Correction Factor	1.000000000		$ 1,756,594		1.000000000	$ 1,785,646		
6	Block 1	3,838,688	$ 0.3192	$ 1,225,309	$ 0.0053	$ 0.3245	$ 1,245,654		1.66%
7	Block 2	2,382,101	$ 0.2197	$ 523,348	$ 0.0036	$ 0.2233	$ 531,923		1.64%
8	Block 3	48,577	$ 0.1634	$ 7,937	$ 0.0027	$ 0.1661	$ 8,069		1.65%
9	Base Rate Revenue			**$ 2,211,203**			**$ 2,263,631**	**$ 52,428**	2.37%

Washington Gas Light Company

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AOBA Proposed Rate Design - Proof of Revenue

Based on 12 Months Ended March 31, 2020 - Pro Forma

Interruptible Service

Ln No	Description	Billing Determinants	Current Rate	Present Revenue	Proposed Increase	Proposed Rate	Proposed Revenue	Revenue Increase	Percent Change
		A	B	C	D	E	F	G	H
1	AOBA Proposed Revenue	$ 10,105,943							
2	Monthly Customer Charge	1,992	$ 126.80	**$ 229,600**	$ 6.35	$ 133.15	**$ 265,235**	**$ 35,635**	15.52%
3	Correction Factor	0.90900000							
4	Distribution Charges			**$ 9,587,637**			**$ 9,840,708**	**$ 253,071**	2.64%
5	Correction Factor	0.90900000		$10,547,455		1.000000000	$ 10,825,910		
6	Block 1	39,478,483	$ 0.1327	$ 5,238,795	$ 0.0035	$ 0.1362	$ 5,376,969		2.64%
7	Block 2	68,765,024	$ 0.0772	$ 5,308,660	$ 0.0020	$ 0.0792	$ 5,448,941		2.64%
8	Base Rate Revenue			**$ 9,817,237**			**$ 10,105,943**	**$ 288,706**	2.94%

Washington Gas Light Company

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Summary of Rates from AOBA Revenue Distribution

Ln No	Rate Class	Present Charge	Proposed Charge	Increase $	Increase %
	Residential				
	Heating				
1	Customer Charge	$ 11.00	$ 11.55	$ 0.5500	5.00%
	Distribtution Charge				
2	First 45 therms per month	$ 0.5033	$ 0.5140	$ 0.0107	2.13%
3	Next 135 therms per month	$ 0.3702	$ 0.3781	$ 0.0079	2.13%
4	Over 180 therms per month	$ 0.2802	$ 0.2862	$ 0.0060	2.14%
	Non-Heating				
5	Customer Charge	$ 11.00	$ 11.55	$ 0.5500	5.00%
	Distribtution Charge				
6	First 45 therms per month	$ 0.4698	$ 0.4708	$ 0.0010	0.21%
7	Next 135 therms per month	$ 0.3424	$ 0.3431	$ 0.0007	0.20%
8	Over 180 therms per month	$ 0.2584	$ 0.2589	$ 0.0005	0.19%
	Commercial & Industrial				
	Heating/Cooling < 3,000				
9	Customer Charge	$ 20.00	$ 20.00	$ -	0.00%
	Distribtution Charge				
10	First 300 therms per month	$ 0.4565	$ 0.4733	$ 0.0168	3.68%
11	Next 6,700 therms per month	$ 0.2696	$ 0.2795	$ 0.0099	3.67%
12	Over 7,000 therms per month	$ 0.1902	$ 0.1972	$ 0.0070	3.68%
	Heating/Cooling > 3,000				
13	Customer Charge	$ 39.95	$ 39.95	$ -	0.00%
	Distribtution Charge				
14	First 300 therms per month	$ 0.4780	$ 0.4903	$ 0.0123	2.57%
15	Next 6,700 therms per month	$ 0.2843	$ 0.2916	$ 0.0073	2.57%
16	Over 7,000 therms per month	$ 0.2024	$ 0.2076	$ 0.0052	2.57%
	Non-Heating/Non-Cooling				
17	Customer Charge	$ 15.75	$ 15.75	$ -	0.00%
	Distribtution Charge				
18	First 300 therms per month	$ 0.3183	$ 0.3183	$ -	0.00%
19	Next 6,700 therms per month	$ 0.2177	$ 0.2177	$ -	0.00%
20	Over 7,000 therms per month	$ 0.1594	$ 0.1594	$ -	0.00%
	Group Metered Apartments				
	Heating/Cooling				
21	Customer Charge	$ 51.90	$ 54.50	$ 2.6000	5.01%
	Distribtution Charge				
22	First 300 therms per month	$ 0.3914	$ 0.3996	$ 0.0082	2.10%
23	Next 6,700 therms per month	$ 0.2709	$ 0.2766	$ 0.0057	2.10%
24	Over 7,000 therms per month	$ 0.2011	$ 0.2053	$ 0.0042	2.09%
	Non-Heating/Non-Cooling				
25	Customer Charge	$ 18.40	$ 19.35	$ 0.9500	5.16%
	Distribtution Charge				
26	First 300 therms per month	$ 0.3192	$ 0.3245	$ 0.0053	1.66%
27	Next 6,700 therms per month	$ 0.2197	$ 0.2233	$ 0.0036	1.64%
28	Over 7,000 therms per month	$ 0.1634	$ 0.1661	$ 0.0027	1.65%
	Interruptible Service				
29	Customer Charge	$ 126.80	$ 133.15	$ 6.3500	5.01%
	Distribtution Charge				
30	First 75,000 therms per month	$ 0.1327	$ 0.1362	$ 0.0035	2.64%
31	Over 75,000 therms per month	$ 0.0772	$ 0.0792	$ 0.0020	2.64%

Washington Gas Light Company

MD PSC Case No. 9651

Washington Gas Proposed Rate Increases

Ln No	Rate Class	Present Charge	Proposed Charge	Increase $	Increase %
	Residential				
	Heating				
1	Customer Charge	$ 11.00	$ 11.25	$ 0.2500	2.27%
	Distribtution Charge				
2	First 45 therms per month	$ 0.5033	$ 0.5614	$ 0.0581	11.54%
3	Next 135 therms per month	$ 0.3702	$ 0.4141	$ 0.0439	11.86%
4	Over 180 therms per month	$ 0.2802	$ 0.3137	$ 0.0335	11.96%
	Non-Heating				
5	Customer Charge	$ 11.00	$ 11.55	$ 0.5500	5.00%
	Distribtution Charge				
6	First 45 therms per month	$ 0.4698	$ 0.5174	$ 0.0476	10.13%
7	Next 135 therms per month	$ 0.3424	$ 0.3769	$ 0.0345	10.08%
8	Over 180 therms per month	$ 0.2584	$ 0.2844	$ 0.0260	10.06%
	Commercial & Industrial				
	Heating/Cooling < 3,000				
9	Customer Charge	$ 20.00	$ 21.00	$ 1.0000	5.00%
	Distribtution Charge				
10	First 300 therms per month	$ 0.4565	$ 0.4987	$ 0.0422	9.24%
11	Next 6,700 therms per month	$ 0.2696	$ 0.2945	$ 0.0249	9.24%
12	Over 7,000 therms per month	$ 0.1902	$ 0.2077	$ 0.0175	9.20%
	Heating/Cooling > 3,000				
13	Customer Charge	$ 39.95	$ 41.95	$ 2.0000	5.01%
	Distribtution Charge				
14	First 300 therms per month	$ 0.4780	$ 0.5165	$ 0.0385	8.05%
15	Next 6,700 therms per month	$ 0.2843	$ 0.3068	$ 0.0225	7.91%
16	Over 7,000 therms per month	$ 0.2024	$ 0.2187	$ 0.0163	8.05%
	Non-Heating/Non-Cooling				
17	Customer Charge	$ 15.75	$ 15.75	$ -	0.00%
	Distribtution Charge				
18	First 300 therms per month	$ 0.3183	$ 0.3183	$ -	0.00%
19	Next 6,700 therms per month	$ 0.2177	$ 0.2177	$ -	0.00%
20	Over 7,000 therms per month	$ 0.1594	$ 0.1594	$ -	0.00%
	Group Metered Apartments				
	Heating/Cooling				
21	Customer Charge	$ 51.90	$ 54.50	$ 2.6000	5.01%
	Distribtution Charge				
22	First 300 therms per month	$ 0.3914	$ 0.4227	$ 0.0313	8.00%
23	Next 6,700 therms per month	$ 0.2709	$ 0.2926	$ 0.0217	8.01%
24	Over 7,000 therms per month	$ 0.2011	$ 0.2173	$ 0.0162	8.06%
	Non-Heating/Non-Cooling				
25	Customer Charge	$ 18.40	$ 19.35	$ 0.9500	5.16%
	Distribtution Charge				
26	First 300 therms per month	$ 0.3192	$ 0.3458	$ 0.0266	8.33%
27	Next 6,700 therms per month	$ 0.2197	$ 0.2382	$ 0.0185	8.42%
28	Over 7,000 therms per month	$ 0.1634	$ 0.1771	$ 0.0137	8.38%
	Interruptible Service				
29	Customer Charge	$ 126.80	$ 133.15	$ 6.3500	5.01%
	Distribtution Charge				
30	First 75,000 therms per month	$ 0.1327	$ 0.1502	$ 0.0175	13.19%
31	Over 75,000 therms per month	$ 0.0772	$ 0.0870	$ 0.0098	12.69%

Attachment A: Resume of Timothy Oliver
Case No. 9651

TIMOTHY B. OLIVER

Revilo Hill Associates, Inc.
7103 Laketree Dr.
Fairfax Station, VA 22039
(757) 810-9609
e-mail: ***timoliver@revilohill.com***

PROFESSIONAL EMPLOYMENT

01/12 - Current **Senior Rate Analyst and Project Manager**, Revilo Hill Associates, Inc.

- Provides testimony on rate design and cost of service issues, rate of return, class cost of service, and rate design analyses in support of expert testimony for electric, natural gas and water utility regulatory proceedings.
- Engaged in the critical review, analyses, and development of merger settlement positions, and evaluation of alternative negotiation strategies for a highly complex proposed merger between two large utility holding companies; including the impacts on the economies of two different jurisdictions and its influences on regulatory practices and policies and the effects of that merger on consumers.

01/08 - 01/12 **Project Manager**, Revilo Hill Associates, Inc.

- Conducted a series of case studies that evaluated energy the efficiency of multi-family apartment buildings of varying age and design on behalf of the Apartment and Office Building Association of Metropolitan Washington (DC).
- Reviews and analyzes annual Distribution Adjustment Charge and Gas Cost Recovery filings submitted by a natural gas distribution utility.
- Evaluated LED Street Lighting issues for two island electric utilities.
- Developed issues associated with proposals for the implementation of revenue decoupling issues for gas and electric utility operations.
- Assessed Net Metering Pilot Program and evaluated proposals for Net Metering tariff changes.
- Supported the creation of an Energy Managers' Roundtable to provide building energy managers a forum in which to share their experience with respect to energy-efficiency technologies, vendor performance, and best practices.
- Participated in an analysis of the impacts of a proposed Liquefied Natural Gas (LNG) terminal facility on energy markets in New England.

- Assisted in an evaluation of the merits of a utility-proposal for system wide deployment of Advanced Metering Infrastructure (AMI).
- Planned and conducted a focus group comprised of Energy Managers to assess (1) their understandings of energy efficiency issues, (2) needs for information and assistance in the identification of energy efficiency opportunities, and (3) other obstacles to their employment of more energy efficient systems and technologies.
- Designed a program to encourage improved energy efficiency in commercial office buildings and multi-family rental housing in the Washington, DC metropolitan area.

05/06 - 01/08 **Research Associate**, Revilo Hill Associates, Inc.
Assisted in the evaluation of energy pricing alternatives for commercial and institutional electricity and natural gas customers; created a data base to support the marketing of competitive energy services for a major broker/ aggregator; provided analytic support for expert testimony in natural gas and electric utility regulatory proceedings in seven different jurisdictions.

10/06- 4/07 **Market Research Team**, Vail Resorts, Vail, CO
Conducted on-mountain and in-town market research for customer satisfaction, brand marketing, and demographics for analysis.

06/03 - 05/06 **Research Analyst**, Revilo Hill Associates, Inc.
Developed a large-scale electronic spreadsheet model of competitive electricity supply costs for one of the nations largest commercial customer based energy aggregations; and assisted in an investigation fuel oil price increases through the analysis of detailed monthly supply, demand, and pricing data for major oil terminal operators within a New England state.

05/02- 8/03 **Research Assistant**, College of William and Mary, Chemistry Department
Preformed extensive mathematical and computer modeling analysis of experimental data to determine the proton affinities of non-protein amino acids and their derivatives; maintained and repaired laboratory equipment including a quadrapole ion trap mass spectrometer.

EDUCATION

2018 MS program, Global Energy Management, University of Colorado at Denver
2009 Building for the Future: Sustainable Home Design, Solar Energy International, Carbondale, CO
2008 Certified Energy Manager, Association of Energy Engineers
2005 BS in Chemistry, College of William and Mary, Williamsburg, VA

RATE CASE PARTICIPATION:

SUBMITTED DIRECT TESTIMONY:

2019	VA	Washington Gas – Base Rates	Docket No. PUE-2018-0001
2019	MD	Washington Gas – Base Rates	Case No. 9605
2019	MD	Potomac Electric – Base Rates	Case No. 9602
2018	MD	Washington Gas – Base Rates	Case No. 9481
2017	DC	AltaGas – WGL Merger	Formal Case No. 1142
2017	MD	AltaGas – WGL Merger	Case No. 9449
2017	MD	Potomac Electric – Base Rates	Case No. 9443
2017	VA	Washington Gas – Base Rates	Docket No. PUE-2016-0001
2016	DC	Potomac Electric – Base Rates	Formal Case No. 1139
2016	DC	Washington Gas – Base Rates	Formal Case No. 1137
2016	RI	National Grid – GCR	Docket No. 4643
2016	MD	Potomac Electric - Base Rates	Case No. 9418
2014	MD	Potomac Electric – Base Rates	Case No. 9336
2014	MD	Washington Gas - Base Rate	Case No. 9335
2013	DC	Potomac Electric Power Company	Formal Case No. 1103

OTHER RATE CASE PARTICIPATION:

District of Columbia

Potomac Electric Power Company	Formal Case No. 1150
AltaGas – WGL Merger	Formal Case No. 1142
Potomac Electric Power Company	Formal Case No. 1139
Washington Gas Light Company	Formal Case No. 1137
Potomac Electric Power Company	Formal Case No. 1130
Exelon-PHI Merger	Formal Case No. 1119
Potomac Electric Power Company	Formal Case No. 1116
Washington Gas Light Company	Formal Case No. 1115
Washington Gas Light Company	Formal Case No. 1093
Potomac Electric Power Company	Formal Case No. 1087
Washington Gas Light Company	Formal Case No. 1079
Potomac Electric Power Company	Formal Case No. 1076

Guam

Guam Power Authority	Docket No. 11-090, Ph II
Guam Power Authority	Docket No. 11-090
Guam Power Authority	Docket No. 07-010

Maryland

AltaGas – WGL Merger	Case No. 9449
Potomac Electric Power Company	Case No. 9443
Washington Gas Light Company	Case No. 9433
Exelon-PHI Merger	Case No. 9361
Washington Gas Light Company	Case No. 9322

Potomac Electric Power Company	Case No. 9311
Potomac Electric Power Company	Case No. 9286
Washington Gas Light Company	Case No. 9267
Potomac Electric Power Company	Case No. 9217

Massachusetts

Investigation of Rate Structures to Promote Efficient Deployment of Demand Management	Docket No. 07-50

Rhode Island – Public Utilities Commission

National Grid – Gas GCR	Docket No. 4719
National Grid – Gas DAC	Docket No. 4708
National Grid – Gas GCR	Docket No. 4647
National Grid – Gas Long-Range Plan	Docket No. 4608
National Grid – Gas GCR	Docket No. 4576
National Grid – Gas DAC	Docket No. 4573
National Grid – Gas GCR	Docket No. 4520
National Grid – Gas DAC	Docket No. 4514
National Grid – Gas GCR	Docket No. 4346
National Grid – Gas DAC	Docket No. 4339
National Grid – Gas On-System Margins	Docket No. 4333
National Grid – Gas Base Rates	Docket No. 4323
National Grid – Gas GCR	Docket No. 4283
National Grid – Gas DAC	Docket No. 4269
National Grid – Electric Backup Service	Docket No. 4232
National Grid – Elec & Gas Revenue Decoupling	Docket No. 4206
National Grid – Gas GCR	Docket No. 4199
National Grid – Gas DAC	Docket No. 4196
National Grid – Gas GCR	Docket No. 4097
National Grid – Gas DAC	Docket No. 4077
National Grid – Electric	Docket No. 4065
National Grid – Gas Portfolio Mgmt	Docket No. 4038
National Grid – Gas GCR	Docket No. 3982
National Grid – Gas DAC	Docket No. 3977
National Grid – Gas GCR	Docket No. 3961

Utah

Dominion Energy Utah-Base Rates	Docket No. PUE 2015-00027

Virgin Islands

Water and Power Authority – Water Rates	Docket No. 613
Water and Power Authority – Electric Rates	Docket No. 612
Water and Power Authority – Water Rates	Docket No. 576
Water and Power Authority – Electric Rates	Docket No. 575

Virginia

Virginia Electric Power Company	Docket No. PUE 2015-00027
Virginia Electric Power Company	Docket No. PUE 2011-00027
Washington Gas Light Company	Docket No. PUE 2010-00139

Attachment B: Fundamentals of Financial Management (Excerpt)
Case No. 9651

Fundamentals of Financial Management

Fifth Edition

Eugene F. Brigham
University of Florida

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traded, then we cannot calculate the firm's beta. For the privately owned firm, we might use the so-called "pure play" CAPM technique. This involves finding a firm in the same line of business that does have public equity, estimating its beta, and then using this beta as a proxy for that of the small business in question.

To illustrate the pure play approach, again consider BTG. The firm is not publicly traded, so we cannot estimate its beta. However, data are available on more established firms, such as Genentech and Genetic Industries, so we could use their betas as representative of the biological and genetic engineering industry. Of course, these firms' betas would have to be subjectively modified to reflect their larger sizes and more established positions, as well as to take account of the differences in the nature of their products and their capital structures as compared to those of BTG. Still, as long as there are public companies in similar lines of business available for comparison, the estimates of their betas can be used to help estimate the cost of capital of a firm whose equity is not publicly traded. Note that a "liquidity premium" as discussed in Chapter 3 would also have to be added to reflect the illiquidity of the small, nonpublic firm's stock.

Flotation Costs for Small Issues

When external equity capital is raised, flotation costs increase the cost of equity capital beyond what it would be for internal funds. These external flotation costs are especially significant for smaller firms, and they can substantially affect capital budgeting decisions involving external equity funds. To illustrate this point, consider a firm that is expected to pay constant dividends forever, and hence whose growth rate is zero. In this case, if F is the percentage flotation cost, then the cost of equity capital is $k_e = D_1/[P_0(1 - F)]$. The higher the flotation cost, the higher the cost of external equity.

How big is F? According to the latest Securities and Exchange Commission data, the average flotation cost of large common stock offerings (more than $50 million) is only about 4 percent. For a firm that is expected to provide a 15 percent dividend yield (that is, $D_1/P_0 = 15\%$), the cost of equity is 15%/(1 − 0.04), or 15.6 percent. However, the SEC's data on small stock offerings (less than $1 million) show that flotation costs for such issues average about 21 percent. Thus, the cost of equity capital in the preceding example would be 15%/(1 − 0.21), or about 19 percent. When we compare this to the 15.6 percent for large offerings, it is clear that a small firm would have to earn considerably more on the same project than a large firm. Small firms are therefore at a substantial disadvantage because of the effects of flotation costs.

The Small-Firm Effect

A number of researchers have observed that portfolios of small-firm stocks have earned consistently higher average returns than those of large-firm stocks; this is called the "small-firm effect." On the surface, it would seem to be advantageous to the small firm to provide average returns in the stock market that are higher than those of large firms. In reality, it is bad news for the small firm; what the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of large firms. Therefore, the cost of equity capital is higher for small firms. This compounds the high flotation cost problem noted above.

It may be argued that stocks of small firms are riskier than those of large ones and that this accounts for the differences in returns. It is true that academic research usually finds that betas are higher on average for small firms than for large ones. However, the larger returns for small firms remain larger even after adjusting for the effects of their higher risks as reflected in their beta coefficients.

The small-firm effect is an anomaly in the sense that it is not consistent with the CAPM theory. Still, higher returns reflect a higher cost of capital, so we must conclude that smaller firms do have higher capital costs than otherwise similar larger firms. The manager of a small firm should take this factor into account when estimating his or her firm's cost of equity capital. In general, the cost of equity capital appears to be about four percentage points higher for small firms (those with market values of less than $20 million) than for large, New York Stock Exchange firms with similar risk characteristics.