

November 4, 2024

VIA ELECTRONIC FILING

Brinda Westbrook-Sedgwick
Commission Secretary
Public Service Commission
of the District of Columbia
1325 "G" Street, NW, 8th Floor
Washington, D.C. 20005

**Re: Formal Case No. 1180
[Washington Gas's Supplemental Direct Testimony]**

Dear Ms. Westbrook-Sedgwick:

Transmitted for filing is Washington Gas Light Company's ("Washington Gas" or "Company") Supplemental Direct Testimony of the following Company witnesses:

- James D. Steffes, Exhibit WG (2A)
- Robert E. Tuoriniemi, Exhibit WG (2D)
- Frederick J. Morrow, Exhibit WG (2I)
- Andrew Lawson, Exhibit WG (2O)
- Kevin Murphy (P)

Washington Gas is submitting this supplemental testimony under protest, as the Company is considering seeking reconsideration of Public Service Commission of the District of Columbia ("Commission") Order No. 22311. Washington Gas submits this supplement testimony subject to its right to seek reconsideration of Order No. 22311, and subject to the Commission's ruling on any application for reconsideration of Order No. 22311 that the Company pursues. Furthermore, Washington Gas reserves all rights with respect to this testimony up to and at the point it is moved into the record, and its rights to pursue any legal remedies with respect to Order No. 22311 or subsequent order(s) of the Commission regarding supplemental direct testimony.

Sincerely,

A handwritten signature in blue ink, appearing to read "John C. Dodge", is positioned below the word "Sincerely,".

John C. Dodge
Associate General Counsel and
Director, Regulatory Matters

cc: Per Certificate of Service

BEFORE THE
PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA

FORMAL CASE No. 1180

IN THE MATTER OF THE APPLICATION OF WASHINGTON GAS LIGHT COMPANY
FOR AUTHORITY TO INCREASE EXISTING RATES
AND CHARGES FOR GAS SERVICE

VOLUME 1 OF 1

SUPPLEMENTAL TESTIMONY
WG (2A), WG (2D), WG (2I), WG (2O) AND WG (P)

(WITNESSES STEFFES, TUORINIEMI, MORROW, LAWSON & MURPHY)

SUPPORTING EXHIBITS
WG (2D)-1 WG (2I)-1 WG (P)-1

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DATED: NOVEMBER 4, 2024

BEFORE THE
PUBLIC SERVICE COMMISSION OF THE
DISTRICT OF COLUMBIA

IN THE MATTER OF)

THE APPLICATION OF WASHINGTON GAS)
LIGHT COMPANY FOR AUTHORITY TO)
INCREASE EXISTING RATES AND)
CHARGES FOR GAS SERVICE)

FORMAL CASE NO. 1180

WASHINGTON GAS LIGHT COMPANY
District of Columbia

SUPPLEMENTAL DIRECT TESTIMONY OF JAMES D. STEFFES
Exhibit WG (2A)

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WASHINGTON GAS LIGHT COMPANY

DISTRICT OF COLUMBIA

SUPPLEMENTAL DIRECT TESTIMONY OF JAMES D. STEFFES

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5 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.**

6 A. My name is James D. Steffes, and I am Senior Vice President for
7 Washington Gas Light Company (“Washington Gas” or “Company”). My
8 business address is 1000 Maine Avenue, SW, Washington, D.C. 20024.

9 **Q. ARE YOU THE SAME JAMES STEFFES WHO SUBMITTED DIRECT**
10 **TESTIMONY IN THIS MATTER?**

11 A. Yes.

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13 **I. PURPOSE OF TESTIMONY**

14 **Q. WHY IS THE COMPANY FILING SUPPLEMENTAL DIRECT TESTIMONY?**

15 A. On October 9, 2024, the Public Service Commission of the District of
16 Columbia (“Commission”) issued Order No. 22311 in this case, which directed
17 Washington Gas to provide a detailed description of the Company’s capital
18 project planning and selection process, in response to information sought by the
19 District of Columbia Government (“DCG”). In addition, the Commission ordered
20 Washington Gas to file exhibits and workpapers sufficient to show, for each
21 project over \$100,000 that Washington Gas proposes as additions to plant in
22 service in this case, the documentation of project need; the budgeted and actual
23 costs of the project; project variance and/or re-authorization forms for each
24 project for which they were prepared; and the Federal Energy Regulatory
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1 Commission ("FERC") account that is charged for each project (including the
2 split amounts for projects that are accounted for under multiple FERC
3 accounts). Washington Gas also must file detailed tables showing the capital
4 additions represented by each itemized project over \$100,000, the remaining
5 capital additions, the capital retirements, and the resulting net change in plant
6 in service for each FERC account from the approved values in Formal Case No.
7 1169.

8 Further, the Commission ordered the Company to provide information
9 sought by the Apartment and Office Building Association of Metropolitan
10 Washington ("AOBA"). This information includes:

- 11 1. The Company's evaluation of customers' costs for alternatives to
12 continued use of natural gas for specific end-uses;
- 13 2. The Company's evaluation of the affordability of natural gas service
14 for its District customers by rate schedule;
- 15 3. The impact of the Company's proposed rate increases by rate
16 schedule on expected changes in service requirements and billing
17 determinants;
- 18 4. The impact of DC climate policies on the economics of the Company's
19 planned capital investments, expected lives for distribution assets,
20 and the Company's depreciation rates for ratemaking purposes; and
21 5. The Company's projected costs for Cast Iron Mains and the projected
22 impacts of Cast Iron main replacement on rates.

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1 **Q. WHAT OTHER COMPANY WITNESSES ARE SUBMITTING**
2 **SUPPLEMENTAL DIRECT TESTIMONY?**

3 A. In addition to my testimony, four (4) other Company witnesses are
4 submitting supplemental testimony. Those witnesses are:

- 5 • Company Witness Kevin Murphy describes the Company's capital
6 planning process for the District, as well as identification of project needs
7 and gas distribution projects, prioritization of projects, evaluation of
8 alternative approaches to pipeline replacement, and project cost
9 estimates and variances.
- 10 • Company Witness Jack Morrow prepared an analysis of capital projects
11 with a cost of more than \$100,000, an explanation of variances between
12 estimated and actual costs for such projects, and a description of the
13 management of field-related changes.
- 14 • Company Witness Robert E. Tuoriniemi discusses a net change in plant
15 in service, by FERC account, and that there is no impact from the
16 Company's supplemental direct testimony on the revenue requirement
17 requested in this case.
- 18 • Company Witness Andrew Lawson addresses AOBA's proposed
19 supplemental direct testimony topics on affordability, the impact of the
20 Company's proposed rate increases by rate schedule on expected
21 changes in service requirements and billing determinants, and the impact
22 of cast iron replacement on rates.

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II. IDENTIFICATION OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. No. I do not.

III. TESTIMONY RESPONSIVE TO ORDER NO. 22311

Q. WHAT IS THE FIRST ISSUE IDENTIFIED IN ORDER NO. 22311 YOU WILL ADDRESS?

A. I first address a question raised by DCG and identified in Paragraph 6 of Order No. 22311, which asks the Company to describe “How WGL incorporates District climate, equity, and other policies into its capital planning and selection processes.”

Q. HOW DOES THE COMPANY INCORPORATE THE DISTRICT’S CLIMATE, EQUITY AND OTHER PUBLIC POLICIES INTO CAPITAL PLANNING AND SELECTION?

A. The Company follows the laws and regulations of the District of Columbia, as well as orders issued by the Commission and other regulators, including the U.S. Pipeline and Hazardous Materials Safety Administration (“PHMSA”), to operate its system in a safe manner, and to provide reliable service to our customers.

The Company’s approach to capital planning, particularly for accelerated pipe replacements, incorporates the District’s climate goals by deploying capital to replace leak-prone infrastructure, which, over time, will result in lowering greenhouse gas emissions.

1 The Company's capital planning process also supports the District's
2 equity goals. By way of example, the Company's new JANA Lighthouse risk
3 ranking methodology is designed to be unbiased in terms of equity by providing
4 a common value for property/structures. This approach provides risk forecasts
5 that are equity neutral.

6 Washington Gas's capital planning routinely supports other District
7 policies, as well. In 2018, the Company proactively entered into a community
8 benefits agreement ("CBA") with the Laborers' International Union of North
9 America ("LiUNA"), the union which represents workers employed by the
10 Company's contractors and subcontractors. That CBA requires Washington
11 Gas contractors to pay the prevailing wage in the District of Columbia for new
12 or renegotiated contracts.

13 The Company reminds the Commission that this proceeding is a
14 backward-looking rate case based upon a historic test year and is not the
15 appropriate opportunity to address the District's climate goals.

16 **Q. WHAT IS THE NEXT ISSUE THAT YOU WILL ADDRESS IN YOUR**
17 **SUPPLEMENTAL TESTIMONY?**

18 A. I will next address a question raised by AOBA and identified in Paragraph
19 7 of Order No. 22311, which asks the Company to provide information regarding
20 the Company's evaluation of customers' costs for alternatives to continued use
21 of natural gas for specific end-uses.

22 **Q. HOW DOES THE COMPANY EVALUATE CUSTOMERS' COSTS FOR**
23 **ALTERNATIVES TO CONTINUED USE OF NATURAL GAS FOR SPECIFIC**
24 **END-USES?**

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1 A. As noted above, the Company provides service to its customers pursuant
2 to its approved tariff, and is subject to District laws, as well as the regulations
3 and orders of the Commission. Washington Gas is not aware that the
4 Commission has approved or directed the Company to evaluate customers'
5 costs for alternatives for continued use of natural gas for specific end-uses.
6 Consequently, the Company does not undertake detailed appliance and specific
7 end-use alternatives evaluations.

8 **Q. WHAT IS THE IMPACT OF DC CLIMATE POLICIES ON THE ECONOMICS**
9 **OF THE COMPANY'S PLANNED CAPITAL INVESTMENTS, EXPECTED**
10 **LIVES FOR DISTRIBUTION ASSETS, AND THE COMPANY'S**
11 **DEPRECIATION RATES FOR RATEMAKING PURPOSES?**

12 A. There is no impact to the Company's planned capital investments based
13 on the District's climate policies because the Company has an obligation to
14 safely and reliably serve its customers pursuant to its tariff, and that requires
15 continued investment into the system. Further, the Company has not modified
16 the expected lives for distribution assets or depreciation rates for ratemaking
17 purposes. In this case, the Company's depreciation rates recognize the useful
18 life of the assets consistent with industry practice and accounting principles, as
19 more fully described in Company Witness White's Direct Testimony.

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IV. CONCLUSION

Q. DOES THIS COMPLETE YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. Yes, it does, subject to the reservation of rights included in the Company's cover letter.

ATTESTATION

I, JAMES D. STEFFES, whose Testimony accompanies this Attestation, state that such testimony was prepared by me or under my supervision; that I am familiar with the contents thereof; that the facts set forth therein are true and correct to the best of my knowledge, information and belief; and that I adopt the same as true and correct.

James D. Steffes

JAMES D. STEFFES

November 3, 2024

DATE

**WITNESS TUORINIEMI
EXHIBIT WG (2D)**

BEFORE THE
PUBLIC SERVICE COMMISSION OF THE
DISTRICT OF COLUMBIA

IN THE MATTER OF

THE APPLICATION OF WASHINGTON GAS
LIGHT COMPANY FOR AUTHORITY TO
INCREASE EXISTING RATES AND
CHARGES FOR GAS SERVICE

FORMAL CASE NO. 1180

WASHINGTON GAS LIGHT COMPANY
District of Columbia

SUPPLEMENTAL DIRECT TESTIMONY OF ROBERT E. TUORINIEMI
Exhibit WG (2D)

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Exhibits

	<u>Title</u>	<u>Exhibit</u>
	Net Change in Plant In Service.....	Exhibit WG (2D)-1

WASHINGTON GAS LIGHT COMPANY

District of Columbia

SUPPLEMENTAL DIRECT TESTIMONY OF ROBERT E. TUORINIEMI

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5 Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

6 A. My name is Robert E. Tuoriniemi. I am the Chief Regulatory Accountant for
7 Washington Gas Light Company, ("Washington Gas" or the "Company"). My
8 business address is 6801 Industrial Road, Springfield, VA 22151.

9 Q. HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN THIS PROCEEDING?

10 A. Yes, I previously submitted Direct Testimony, Exhibit WG (D), together
11 with Exhibits WG (D)-1 through WG (D)-9, in which I described and supported
12 the test year per book amounts, the ratemaking and pro forma accounting
13 adjustments, and the ratemaking and pro forma amounts, and showed the
14 calculation justifying the Company's request for a base rate increase of
15 \$45.6 million.¹

16 Q. DOES THE COMPANY'S SUPPLEMENTAL DIRECT TESTIMONY AFFECT
17 THE \$45 MILLION INCREASE IN BASE RATES INCLUDED IN THE
18 COMPANY'S DIRECT TESTIMONY IN THIS CASE?

19 A. No, it does not.
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¹ The request included \$11.7 million related to the revenue requirement for the transfer of amounts being collected pursuant to the Company's District of Columbia accelerated replacement program through the PROJECT *pipes* surcharge to base rates.

I. PURPOSE OF SUPPLEMENTAL DIRECT TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. This Supplemental Direct Testimony is submitted in response to the Public Service Commission of the District of Columbia (the “Commission”) Order No. 22311, issued in Formal Case No. 1180.² The Supplemental Direct Testimonies of Washington Gas Witnesses Morrow, Murphy and Steffes address matters in paragraphs 6 and 7 of Order No. 22311, in Formal Case No. 1180.³ Paragraph 6 requires Washington Gas to provide information requested by the District of Columbia Government (“DCG”), seeking supplemental testimony on Washington Gas’s capital investments. Paragraph 7 requires Washington Gas to provide information to address the Apartment and Office Building Association of Metropolitan Washington (“AOBA”) concerns regarding the cost of updating Washington Gas’s infrastructure, particularly cast-iron mains, especially considering the District of Columbia’s move to electrification.

None of the information provided by Washington Gas in response to Paragraphs 6 and 7 of Order No. 22311, has any effect on the test year, rate effective period, or the Distribution-only and Ratemaking Adjustments proposed in the Direct Testimony of Company Witnesses Tuoriniemi, Smith, Banks, and Bell.

There is one (1) accounting-related item that I address in this Supplemental Direct Testimony:

1. Paragraph 6, Item 3— Net Change In Plant In Service.

² Formal Case No. 1180, *In the Matter of the Application of Washington Gas Light Company For Authority to Increase Existing Rates and Charges For Gas Service*, Order No. 22311 (October 9, 2024).

³ Paragraph 14 of Order No. 22311 in Formal Case No. 1180, at 5, states “Washington Gas Light Company shall file supplemental testimony on the issues identified by the District of Columbia Government and the Apartment and Office Building Association of Metropolitan Washington in paragraphs 6 and 7 on November 4, 2024.”

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II. SUMMARY OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. Yes. I sponsor the following exhibit,
Exhibit WG (2D)-1, Net Change In Plant In Service.

III. PARAGRAPH 6, ITEM 3— NET CHANGE IN PLANT IN SERVICE

Q. WHAT IS YOUR UNDERSTANDING OF THE REQUIREMENTS OF PARAGRAPH 6, ITEM 3 IN ORDER NO. 22311 RELATED TO THE NET CHANGE IN PLANT IN SERVICE?

A. The Commission directed Washington Gas to file detailed tables showing the capital additions represented by each itemized project over \$100,000, the remaining capital additions, the capital retirements, and the resulting net change in plant in service for each Federal Energy Regulatory Commission (“FERC”) account from the approved values in Formal Case No. 1169.⁴

Q. HAS WASHINGTON GAS ALREADY PROVIDED SIMILAR INFORMATION IN THIS CASE?

A. Yes, it has. Exhibit WG (D)-7, and the related electronic files, provided summarized information about the change in rate base, including Gas Plant in Service, from the level used to determine the revenue requirement in Formal Case No. 1169 to the requested revenue requirement in this proceeding.

⁴ Formal Case No. 1169, *In the Matter of the Application of Washington Gas Light Company for Authority to Increase Existing Rates and Charges For Gas Service.*

1 Q. ARE THERE DISTINCTIONS BETWEEN THAT INFORMATION AND THE
2 INFORMATION YOU INCLUDED IN EXHIBIT WG (2D)-1, NET CHANGE IN
3 PLANT IN SERVICE?

4 A. Yes there are. The information included in Exhibit WG (2D)-1, is prepared
5 using end-of period amounts at the project level as of December 31, 2021, and
6 March 31, 2023. The information on Exhibit WG (D)-7 uses a combination of
7 average and end of period information.

8 Q. PLEASE EXPLAIN THAT IN GREATER DETAIL.

9 A. The revenue requirement in Formal Case No. 1169 was based on a 13-
10 month average test year ending December 31, 2021. Order No. 21939 in Formal
11 Case No. 1169, included a net rate base adjustment for PROJECT*pipes* totaling
12 \$39,425,224.⁵ The total comprises \$53,787,550 of PROJECT*pipes*
13 expenditures incurred as of December 31, 2021, on an end of period basis,
14 together with the related depreciation and deferred income tax effects.⁶ The
15 Commission denied any other post-test year adjustments to Gas Plant in
16 Service.⁷

17 The Revenue Requirement in this case is based on a 13-month average
18 test year ending March 31, 2024.⁸ Consistent with the Commission decision in
19 Formal Case No. 1169, the revenue requirement reflects test year amounts
20 related to PROJECT*pipes*. Adjustment 3 reflects adjustments of test year
21 amounts related to PROJECT*pipes* incurred as of March 31, 2024, from average
22 to end-of-period amounts. This is the same approach approved by the
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25 ⁵ Formal Case No. 1169, Order No. 21939, at 84 (December 22, 2023).

⁶ Exhibit WG (D), page 51, lines 11-16.

⁷ Formal Case No. 1169, Order No. 21939, at 41 (December 22, 2023).

⁸ Exhibit WG (D), page 4, lines 21-23.

1 Commission in Formal Case No. 1169 incurred as of March 31, 2024, adjusted
2 from average to end-of-period amounts.⁹

3 Therefore, the change in plant information provided in Exhibit WG (D)-7
4 highlights the change in a combination of end-or-period PROJECT *pipes*
5 information and 13-month average information for all other comparative test year
6 amounts.

7 Q. WOULD A PROJECT LEVEL ANALYSIS OF THE NET CHANGE IN PLANT IN
8 SERVICE USING 13-MONTH AVERAGE INFORMATION BE RESPONSIVE TO
9 YOUR UNDERSTANDING OF THE COMMISSION DIRECTIVE IN ORDER
10 NO. 22311?

11 A. No, it would not. In fact, it would make it contrary to the Commission belief
12 that the requested data “is relevant and would assist the Commission in having
13 a more complete record upon which to base its decisions in this proceeding.”¹⁰
14 Using actual end of period amounts from one period to another is a direct
15 comparison of project-level plant additions and retirements over time.

16 Q. PLEASE DESCRIBE EXHIBIT WG (2D)-1.

17 A. Exhibit WG (2D)-1 presents a roll forward of plant in service on an end of
18 period basis from December 31, 2021, the end of the test year in Formal Case
19 No. 1169, summarizes the detailed tables showing the capital additions
20 represented by each itemized project over \$100,000, adds the remaining capital
21 additions and the retirements, resulting in the net change in plant in service by
22 FERC account and is summarized in the table that follows.

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24 Plant in Service FC1169 12/31/2021 End of Period \$ 1,096,946,492

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⁹ Exhibit WG (D), page 52, lines 9-12.

¹⁰ Formal Case No. 1180, Order No. 22311, at 5.

1	Additions within \$100,000 Scope	
2	Operating Unit 01 DC	123,414,127
3	DC Share of Common	44,733,909
4	Addition Outside of \$100,000 Scope	66,913,250
5	Retirements	(10,077,873)
6	Other	<u>(1,402,360)</u>
7	Plant in Service FC1180 03/31/2024 End of Period	<u>\$ 1,320,527,545.</u>

8 Q. DOES THAT COMPLETE YOUR SUPPLEMENTAL DIRECT TESTIMONY?
9 A. Yes, it does, subject to the reservation of rights included in the Company's
10 cover letter.

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Washington Gsa Light Company
Gas Plant in Service
Formal Case No. 1169 to Formal Case No. 1180

Plant in Service FC1169 12/31/2021 End of Period	\$ 1,096,946,492
Additions within \$100,000 Scope	
Operating Unit 01 DC	123,414,127
DC Share of Common	44,733,909
Additional Outside of \$100,000 Scope	66,913,250
Retirements	(10,077,873)
Other	<u>(1,402,360)</u>
Plant in Service FC1180 03/31/2024 End of Period	<u><u>\$ 1,320,527,545</u></u>

Row Labels	Sum of begin_bal	Sum of additions	Sum of retirements	Sum of trans_adj	Sum of end_bal
01 Common Washington Gas Light	730,430,467	286,036,967	(1,175,744)	(7,504,082)	1,007,787,607
Gas Distribution	3,031,831	-	-	-	3,031,831
375000 - Distr - Struct & Improve	324,037	-	-	-	324,037
378001 - Distr - Meas&Reg Sta Alloc	2,707,794	-	-	-	2,707,794
Gas General Plant	154,929,600	36,057,458	-	-	190,987,058
389000 - General - Land	2,451,907	-	-	-	2,451,907
390003 - CNG Station Str Public Use	579,410	628,029	-	-	1,207,438
390004 - General-Struc&Improv Alloc	129,947,902	5,269,191	-	-	135,217,093
391110 - General - Office Fur&Equip	3,864,855	73,881	-	-	3,938,735
391210 - General - Computer Equip	1,494,858	2,316,183	-	-	3,811,041
391300 - General - Copier Lease	-	-	-	-	-
393000 - General - Stores Equip	-	-	-	-	-
394000 - General - Tool,Shop,Gar Eq	7,091,254	10,471,981	-	-	17,563,235
395000 - General - Laboratory Equip	-	-	-	-	-
397100 - General - Comm Equipment	8,908,924	16,953,337	-	-	25,862,261
398000 - General - Misc Equipment	590,491	344,857	-	-	935,348
Gas Intangible	12,597,552	17,289,410	(862,088)	408,720	29,433,594
301000 - Intangible - Organization	19,505	-	-	-	19,505
302000 - Intangible - Franch &Cnsnt	200	-	-	-	200
303000 - Intangible - Computer SW	12,577,848	17,289,410	(862,088)	408,720	29,413,890
303004 - Intangible - WGL Energy An	-	-	-	-	-
303005 - WGL.Com Domain Name	-	-	-	-	-
Gas Storage	72,179,034	5,967,373	(186,221)	-	77,960,186
360001 - Storage-Land& Land Rght Ut	341,480	-	-	-	341,480
3600NU - Storage-Land&LandRght NonU	-	-	-	-	-
361000 - Storage - Struct & Imp	14,901,936	1,085,506	-	-	15,987,442
362000 - Storage - Gas Holders	49,916,376	2,546,533	(186,221)	-	52,276,688
363500 - Storage - Other Equipment	7,019,242	2,335,334	-	-	9,354,576
Gas Transmission	487,692,449	226,722,725	(127,435)	-	714,287,739
365100 - Trans - Land & Land Rights	4,967,383	-	-	-	4,967,383
3651FU - Trans Ld&Ld Rts-Future Use	-	-	-	-	-
3651NU - Trans - Ld&Ld Rhts-NonUtil	-	-	-	-	-
365201 - Trans - Rights of Way Loop	11,025,358	-	-	-	11,025,358
366001 - Trans - Struct&Improv Loop	24,240,856	566,006	-	-	24,806,863
367100 - Trans - Mains - Loop	299,403,129	193,577,548	(126,985)	-	492,853,693
369003 - Trans-Meas Reg Sta Loop	148,055,722	32,579,171	(450)	-	180,634,443
Non-unitized	-	-	-	(7,912,802)	(7,912,802)
Reconciling adjustment to tie to GL	-	-	-	(7,912,802)	(7,912,802)

Allocator		DC Share				
Factor	DC Share	Sum of begin_bal	Sum of additions	Sum of retirements	Sum of trans_adj	Sum of end_bal
		119,895,729	46,306,225	(211,662)	(1,402,360)	164,587,932
		648,047	-	-	-	648,047
Distr - Meas & Reg Sta	0.623022545	201,883	-	-	-	201,883
Total Weather All_NW	0.164770351	446,164	-	-	-	446,164
		28,953,184	6,738,404	-	-	35,691,588
Non_Genl_PInt	0.186879616	458,211	-	-	-	458,211
Non_Genl_PInt	0.186879616	108,280	117,366	-	-	225,646
Non_Genl_PInt	0.186879616	24,284,614	984,704	-	-	25,269,318
Non_Genl_PInt	0.186879616	722,263	13,807	-	-	736,069
Non_Genl_PInt	0.186879616	279,358	432,847	-	-	712,206
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	1,325,211	1,957,000	-	-	3,282,211
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	1,664,896	3,168,233	-	-	4,833,129
Non_Genl_PInt	0.186879616	110,351	64,447	-	-	174,797
		2,354,226	3,231,038	(161,107)	76,381	5,500,539
Non_Genl_PInt	0.186879616	3,645	-	-	-	3,645
Non_Genl_PInt	0.186879616	37	-	-	-	37
Non_Genl_PInt	0.186879616	2,350,543	3,231,038	(161,107)	76,381	5,496,856
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	-	-	-	-	-
		11,892,965	983,246	(30,684)	-	12,845,527
Total Weather All_NW	0.164770351	56,266	-	-	-	56,266
Total Weather All_NW	0.164770351	-	-	-	-	-
Total Weather All_NW	0.164770351	2,455,397	178,859	-	-	2,634,256
Total Weather All_NW	0.164770351	8,224,739	419,593	(30,684)	-	8,613,648
Total Weather All_NW	0.164770351	1,156,563	384,794	-	-	1,541,357
		76,047,308	35,353,537	(19,871)	-	111,380,973
Comp Peak Ann_NW	0.15593292	774,579	-	-	-	774,579
Comp Peak Ann_NW	0.15593292	-	-	-	-	-
Comp Peak Ann_NW	0.15593292	-	-	-	-	-
Comp Peak Ann_NW	0.15593292	1,719,216	-	-	-	1,719,216
Comp Peak Ann_NW	0.15593292	3,779,947	88,259	-	-	3,868,207
Comp Peak Ann_NW	0.15593292	46,686,804	30,185,112	(19,801)	-	76,852,115
Comp Peak Ann_NW	0.15593292	23,086,761	5,080,165	(70)	-	28,166,856
		-	-	-	(1,478,741)	(1,478,741)
Non_Genl_PInt	0.186880	-	-	-	(1,478,741)	(1,478,741)

01 DC Washington Gas Light Company	1,007,393,180	188,792,370	(14,208,031)	-	1,181,977,520
Gas Distribution	902,724,485	186,330,696	(8,025,734)	-	1,081,029,447
375000 - Distr - Struct & Improve	-	-	-	-	-
376100 - Distr - Mains - Steel	88,958,138	9,706,222	(520,300)	-	98,144,060
376101 - Distr - Mains-Spec Struc	86,283	-	-	-	86,283
376200 - Distr - Mains - Plastic	380,200,305	90,475,303	(502,210)	-	470,173,399
376300 - Distr - Mains - Cast Iron	5,974,147	28,816	-	-	6,002,962
378002 - Distr - Meas & Reg Sta	10,374,786	198,698	-	-	10,573,485
380100 - Distr - Services - Steel	36,352,918	20,868,632	(408,758)	-	56,812,792
380200 - Distr - Services - Plastic	305,064,926	60,746,214	(1,314,691)	-	364,496,450
380300 - Distr - Services - Copper	2,980,545	54,593	-	-	3,035,138
381100 - Distr - Meters - Tin Case	-	-	-	-	-
381200 - Distr - Meters - HardCase	22,694,251	2,341,941	(943,284)	-	24,092,908
381300 - Distr - Meters -Index Corr	2,381,928	199,538	-	-	2,581,466
381500 - Distr-Meters -DemandRecord	852,990	-	-	-	852,990
382000 - Distr - Meter Install	38,345,547	1,440,935	(4,258,692)	-	35,527,791
383000 - Distr - House Regulator	4,615,052	253,409	(63,817)	-	4,804,644
384000 - Distr - House Reg Install	3,735,724	16,172	(13,982)	-	3,737,914
386200 - Distr - Gas Light	106,943	221	-	-	107,165
397201 - Distr-Meters - Enscan Unit	-	-	-	-	-
Gas General Plant	28,743,330	1,192,305	(2,906,111)	-	27,029,524
389000 - General - Land	2,833	-	-	-	2,833
390001 - General - Struct & Improv	-	-	-	-	-
390004 - General-Struc&Improv Alloc	1,046,217	-	-	-	1,046,217
391106 - DC POR - Computer Equip	7,234	-	-	-	7,234
391110 - General - Office Fur&Equip	2,297,124	-	(453,214)	-	1,843,909
391210 - General - Computer Equip	3,066,161	-	(1,164,145)	-	1,902,016
391300 - General - Copier Lease	50,040	-	-	-	50,040
392001 - Gen - Trans Eq Utility	-	-	-	-	-
392003 - Gen - Trans Eq NGV Utility	-	-	-	-	-
393000 - General - Stores Equip	41,898	-	(10,600)	-	31,298
394000 - General - Tool,Shop,Gar Eq	2,424,156	-	(137,445)	-	2,286,711
395000 - General - Laboratory Equip	23,975	-	(5,963)	-	18,011
396000 - General - Power Op Equip	-	-	-	-	-
397100 - General - Comm Equipment	7,774,332	45,883	(287,880)	-	7,532,335
397203 - General - Comm Equip Ensca	11,590,236	1,146,422	(842,596)	-	11,894,061
398000 - General - Misc Equipment	419,125	-	(4,266)	-	414,859
Gas Intangible	20,925,847	-	(3,276,186)	-	17,649,661
303000 - Intangible - Computer SW	20,162,926	-	(3,276,186)	-	16,886,741
303004 - Intangible - WGL Energy An	-	-	-	-	-
303005 - WGL.Com Domain Name	-	-	-	-	-

		977,050,763	188,755,061	(9,866,212)	-	1,155,939,613
		902,724,485	186,330,696	(8,025,734)	-	1,081,029,447
Direct	1.000000	-	-	-	-	-
Direct	1.000000	88,958,138	9,706,222	(520,300)	-	98,144,060
Direct	1.000000	86,283	-	-	-	86,283
Direct	1.000000	380,200,305	90,475,303	(502,210)	-	470,173,399
Direct	1.000000	5,974,147	28,816	-	-	6,002,962
Direct	1.000000	10,374,786	198,698	-	-	10,573,485
Direct	1.000000	36,352,918	20,868,632	(408,758)	-	56,812,792
Direct	1.000000	305,064,926	60,746,214	(1,314,691)	-	364,496,450
Direct	1.000000	2,980,545	54,593	-	-	3,035,138
Direct	1.000000	-	-	-	-	-
Direct	1.000000	22,694,251	2,341,941	(943,284)	-	24,092,908
Direct	1.000000	2,381,928	199,538	-	-	2,581,466
Direct	1.000000	852,990	-	-	-	852,990
Direct	1.000000	38,345,547	1,440,935	(4,258,692)	-	35,527,791
Direct	1.000000	4,615,052	253,409	(63,817)	-	4,804,644
Direct	1.000000	3,735,724	16,172	(13,982)	-	3,737,914
Direct	1.000000	106,943	221	-	-	107,165
Direct	1.000000	-	-	-	-	-
		14,795,799	1,154,996	(1,228,225)	-	14,722,570
Non_Genl_PInt	0.186879616	529	-	-	-	529
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	195,517	-	-	-	195,517
Non_Genl_PInt	0.186879616	1,352	-	-	-	1,352
Non_Genl_PInt	0.186879616	429,286	-	(84,697)	-	344,589
Non_Genl_PInt	0.186879616	573,003	-	(217,555)	-	355,448
Non_Genl_PInt	0.186879616	9,352	-	-	-	9,352
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	7,830	-	(1,981)	-	5,849
Non_Genl_PInt	0.186879616	453,025	-	(25,686)	-	427,340
Non_Genl_PInt	0.186879616	4,480	-	(1,114)	-	3,366
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	1,452,864	8,575	(53,799)	-	1,407,640
Direct	1.000000	11,590,236	1,146,422	(842,596)	-	11,894,061
Non_Genl_PInt	0.186879616	78,326	-	(797)	-	77,529
		4,530,960	-	(612,252)	-	3,918,708
Non_Genl_PInt	0.186879616	3,768,040	-	(612,252)	-	3,155,788
Non_Genl_PInt	0.186879616	-	-	-	-	-
Non_Genl_PInt	0.186879616	-	-	-	-	-

303006 - Intangible - DC POR	762,920	-	-	-	762,920
Gas Storage	-	-	-	-	-
363500 - Storage - Other Equipment	-	-	-	-	-
Gas Transmission	54,999,519	1,269,369	-	-	56,268,888
367101 - Trans - Mains - Spur	46,752,955	(43)	-	-	46,752,912
369002 - Trans-Meas Reg Sta Spur	8,246,564	1,269,412	-	-	9,515,976
Grand Total	1,737,823,647	474,829,337	(15,383,775)	(7,504,082)	2,189,765,127

Direct	1.000000	762,920	-	-	-	762,920
Direct	1.000000	-	-	-	-	-
Direct	1.000000	-	-	-	-	-
		54,999,519	1,269,369	-	-	56,268,888
Direct	1.000000	46,752,955	(43)	-	-	46,752,912
Direct	1.000000	8,246,564	1,269,412	-	-	9,515,976
		1,096,946,492	235,061,286	(10,077,873)	(1,402,360)	1,320,527,545

Workpapers

01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Distribution	3 381300 - Distr - Meters -Index Corr	18,972.52	0.00	0.00	0.00	18,972.52
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Distribution	3 381500 - Distr-Meters -DemandRecord	0.00	0.00	0.00	0.00	0.00
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Distribution	3 382000 - Distr - Meter Install	7,435,486.01	659,173.03	0.00	0.00	8,094,659.04
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Distribution	3 383000 - Distr - House Regulator	950,830.90	26,990.22	0.00	0.00	977,821.12
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Distribution	3 384000 - Distr - House Reg Install	894,241.09	6,943.29	0.00	0.00	901,184.38
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Distribution	3 386200 - Distr - Gas Light	7,495.26	0.00	0.00	0.00	7,495.26
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Distribution	3 397201 - Distr-Meters - Enscan Unit	0.00	0.00	0.00	0.00	0.00
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101000 Gas Plant Non-Unitized	Gas Transmission	5 369002 - Trans-Meas Reg Sta Spur	0.00	0.00	0.00	0.00	0.00
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101010 Intangibles	Gas Intangible	1 303000 - Intangible - Computer SW	20,162,926.43	0.00	(3,276,185.82)	0.00	16,886,740.61
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101010 Intangibles	Gas Intangible	1 303004 - intangible - WGL Energy An	0.00	0.00	0.00	0.00	0.00
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101010 Intangibles	Gas Intangible	1 303005 - WGL.Com Domain Name	0.00	0.00	0.00	0.00	0.00
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Gas	101010 Intangibles	Gas Intangible	1 303006 - Intangible - DC POR	762,920.16	0.00	0.00	0.00	762,920.16
01/2022	03/2024	1 - SEC - Financial Reporting	01 DC Washington Gas Light Company	Storage	101000 Gas Plant In Service	Gas Storage	2 363500 - Storage - Other Equipment	0.00	0.00	0.00	0.00	0.00
01/2022	03/2024	1 - SEC - Financial Reporting	01 Common Washington Gas Light	Gas	101000 Gas Plant Non-Unitized	Non-unitized	Reconciling adjustment to tie to GL	0.00	0.00	0.00	(7,912,802.19)	(7,912,802.19)
								1,737,823,647.08	474,829,336.58	(15,383,774.54)	(7,504,082.21)	2,189,765,126.91

Utility Account "FERC Acct"	act_work_order_number	act_work_order_description	Project_cost	Budget	DC Factor		DC Share	
					Allocator	Rate	Project_cost	Budget
01 Common Washington Gas Light			277,500,661.25	221,838,964.23			44,733,909.22	
303000 - Intangible - Computer SW	C1002643	SAP Solutions Manager Upgrade	876,961.95	-	Non_Genl_Plnt	18.5548%	162,718.10	-
	C1002895	ARM Project Increment 3. SC. The pr	786,676.34	-	Non_Genl_Plnt	18.5548%	145,965.83	-
	C1002922	Peopletools upgrade. SC. Upgrade of	582,325.19	-	Non_Genl_Plnt	18.5548%	108,048.99	-
	C1002947	Avaya Upgrade. SC. Avaya configurat	432,765.74	-	Non_Genl_Plnt	18.5548%	80,298.60	-
	C1002987	Robotic Process Automation Initiati	143,231.82	-	Non_Genl_Plnt	18.5548%	26,576.31	-
	C1003013	Inside leak survey SC. Job descript	199,525.89	500,000.00	Non_Genl_Plnt	18.5548%	37,021.53	92,773.75
	C1005013	LMS Upgrade, SC. SAP is moving all	102,272.38	215,000.00	Non_Genl_Plnt	18.5548%	18,976.39	39,892.71
	C1005039	HANA 2.0 DB Upgrade w/ EPH 8 & OT	176,842.08	2,000,000.00	Non_Genl_Plnt	18.5548%	32,812.61	371,095.01
	C1005101	Tax Compliance & Provision Def Opex	115,705.28	-	Non_Genl_Plnt	18.5548%	21,468.83	-
	C1005106	ESRI GIS Expansion	301,312.61	175,000.00	Non_Genl_Plnt	18.5548%	55,907.80	32,470.81
	C1005136	Quality Management System	100,449.85	100,000.00	Non_Genl_Plnt	18.5548%	18,638.22	18,554.75
	C1005137	Digitize Forms	125,945.57	100,000.00	Non_Genl_Plnt	18.5548%	23,368.89	18,554.75
	C1005143	Tracking and Traceability Phase 3	106,048.30	120,000.00	Non_Genl_Plnt	18.5548%	19,667.00	22,265.70
	C1005144	GIS Phase 2	218,898.62	150,000.00	Non_Genl_Plnt	18.5548%	40,616.09	27,832.13
	C1005286	AMPED Phase 2	349,359.22	65,000.00	Non_Genl_Plnt	18.5548%	64,822.73	12,060.59
	C1005298	Utility Analytic Solutions	965,769.01	401,600.00	Non_Genl_Plnt	18.5548%	179,196.03	74,515.88
	C1005313	PeopleSoft Upgrade	278,468.58	300,000.00	Non_Genl_Plnt	18.5548%	51,669.15	55,664.25
	C1005417	Asset Risk Management	2,584,554.18	3,638,960.00	Non_Genl_Plnt	18.5548%	479,557.58	675,199.95
	C1005418	Investment Planning	2,698,791.29	1,978,570.00	Non_Genl_Plnt	18.5548%	500,753.99	367,118.73
	C1005419	Equip replacing EAI Interface	155,544.77	160,000.00	Non_Genl_Plnt	18.5548%	28,860.94	29,687.60
	C1005422	ESRI Foun Stabilization Digital Cos	790,834.22	650,000.00	Non_Genl_Plnt	18.5548%	146,737.32	120,605.88
	C1005428	End User Compute Device Moder	380,356.32	512,717.00	Non_Genl_Plnt	18.5548%	70,574.17	95,133.36
	C1005477	US Utilities Financial Reporting-SC	189,847.63	279,000.00	Non_Genl_Plnt	18.5548%	35,225.75	51,767.75
	C1005533	Asset Risk Model and Portfolio CAPE	475,084.69	475,000.00	Non_Genl_Plnt	18.5548%	88,150.78	88,135.07
	C1005565	Customer Call Center Regulatory Rep	824,372.83	880,171.00	Non_Genl_Plnt	18.5548%	152,960.32	163,313.53
	C1005567	Arm Reports Enhancement - SOC	794,548.25	1,064,590.00	Non_Genl_Plnt	18.5548%	147,426.45	197,532.02
	C1005574	2023 WGL EUC Lifecycle	768,826.80	1,075,000.00	Non_Genl_Plnt	18.5548%	142,653.90	199,463.57
	C1005575	2023 WGL Server Lifecycle	222,481.11	350,000.00	Non_Genl_Plnt	18.5548%	41,280.82	64,941.63
	C1005576	2023 WGL Teams Lifecycle	315,714.89	384,190.00	Non_Genl_Plnt	18.5548%	58,580.11	71,285.50
	C1005611	SAP Technical Design - Tech Upgrade	329,666.05	407,000.00	Non_Genl_Plnt	18.5548%	61,168.71	75,517.83
361000 - Storage - Struct & Imp	C1005071	Ravensworth Fire Water Piping Repl	217,645.59	10,000.00	Total Weather All_NW	16.4770%	35,861.54	1,647.70
	C1005460	Rockville Line Heaters Repair	226,789.29	290,308.00	Total Weather All_NW	16.4770%	37,368.15	47,834.15
	C1005526	Phase III - RAV Firewater Pipe	530,912.37	540,000.00	Total Weather All_NW	16.4770%	87,478.62	88,975.99
362000 - Storage - Gas Holders	C1005054	Rockville Firewater Tank Replacemen	578,235.40	560,000.00	Total Weather All_NW	16.4770%	95,276.05	92,271.40
	C1005230	Ravensworth UPS Replacement	128,312.02	10,000.00	Total Weather All_NW	16.4770%	21,142.02	1,647.70
	C1005312	RCK-Tank Liquid Meas Improvemnt	166,427.26	175,000.00	Total Weather All_NW	16.4770%	27,422.28	28,834.81
	C1005346	Propane Tank Level Transmitters	115,204.27	110,000.00	Total Weather All_NW	16.4770%	18,982.25	18,124.74
	C1005377	Rockville Boiler Condensate Line	426,917.59	100,001.00	Total Weather All_NW	16.4770%	70,343.36	16,477.20
	C1005441	RCK Replace NG Field Header Valves	182,054.92	176,267.00	Total Weather All_NW	16.4770%	29,997.25	29,043.58
	C1005600	Instrument Air Compressor	115,145.18	70,000.00	Total Weather All_NW	16.4770%	18,972.51	11,533.92
363500 - Storage - Other Equipment	C1002472	Rockville Strip Control	580,763.26	-	Total Weather All_NW	16.4770%	95,692.57	-
	C1002717	Ravensworth Cavern De-Watering Syst	204,049.42	50,000.00	Total Weather All_NW	16.4770%	33,621.29	8,238.52
	C1005304	1.Rockville Gate Station Gas Detec	245,518.18	254,000.00	Total Weather All_NW	16.4770%	40,454.12	41,851.67
	C1005395	RVN-Fire Water Piping Replacement	1,013,412.47	1,000,000.00	Total Weather All_NW	16.4770%	166,980.33	164,770.35
366001 - Trans - Struct&improv Loop	C1005686	Strip 2 Valve 18 PRS Only	504,769.26	500,000.00	Comp Peak Ann_NW	15.5933%	78,710.14	77,966.46
367100 - Trans - Mains - Loop	C1002318	PG & DC Sup Rein Pipe -Construction	45,786,240.74	-	Comp Peak Ann_NW	15.5933%	7,139,582.21	-
	C1002414	24" PipeL-Gardiner Rd to Crain Hwy	1,051,146.88	-	Comp Peak Ann_NW	15.5933%	163,908.40	-
	C1002675C	Strip 1 West - Phase 3	37,847,104.90	37,340,504.00	Comp Peak Ann_NW	15.5933%	5,901,609.58	5,822,613.82
	C1002675E	Billable - Strip 1W Phase 1 Rework	309,848.82	150,000.00	Comp Peak Ann_NW	15.5933%	48,315.63	23,389.94
	C1002675F	Strip 1 West Phase 4	29,423,122.13	44,931,000.00	Comp Peak Ann_NW	15.5933%	4,588,033.35	7,006,222.03
	C1002718	Strip 6 - Downstream of Rosslyn	7,286,306.39	7,450,000.00	Comp Peak Ann_NW	15.5933%	1,136,175.03	1,161,700.25
	C1002924	"Strip 2 -Lawyers Road Washout 105	267,602.46	-	Comp Peak Ann_NW	15.5933%	41,728.03	-
	C1003008	Strip 24- Central Ave and Crain Hig	135,991.63	-	Comp Peak Ann_NW	15.5933%	21,205.57	-
	C1005011	Chillum Washout	862,955.33	900,000.00	Comp Peak Ann_NW	15.5933%	134,563.14	140,339.63
	C1005074	Strip 24 Weld Over Sleeves (WOS)	262,059.64	50,000.00	Comp Peak Ann_NW	15.5933%	40,863.72	7,796.65
	C1005126	Rosslyn Tunn-Fireproof-8",16" main	168,358.92	250,000.00	Comp Peak Ann_NW	15.5933%	26,252.70	38,983.23
	C1005139	Strip 23-Emergency Leak DC-12th&M	148,981.88	225,000.00	Comp Peak Ann_NW	15.5933%	23,231.18	35,084.91
	C1005184	Strip 14, Valve 4 Leak	148,333.96	250,000.00	Comp Peak Ann_NW	15.5933%	23,130.15	38,983.23
	C1005216	Strip 24 Tee at Leeland Rd	514,875.42	712,341.00	Comp Peak Ann_NW	15.5933%	80,286.03	111,077.41
	C1005217	Strip 24 ILI Train Derailment	551,735.41	473,017.00	Comp Peak Ann_NW	15.5933%	86,033.71	73,758.92
	C1005257	Depth of Cover - North of Hall Rd	128,175.02	50,000.00	Comp Peak Ann_NW	15.5933%	19,986.71	7,796.65
	C1005258	Strip 14 Modification	862,255.73	710,000.00	Comp Peak Ann_NW	15.5933%	134,454.05	110,712.37

367100 - Trans - Mains - Loop	C1005267	Strip 12 Emergency Pipe Replacement	129,631.00	350,000.00	Comp Peak Ann_NW	15.5933%	20,213.74	54,576.52	
	C1005274	ILI Readiness - Strip 14 stopple	1,789,320.24	868,220.00	Comp Peak Ann_NW	15.5933%	279,013.93	135,384.08	
	C1005302	Strip 4 Install of 24" Trans Main	1,047,408.15	50,000.00	Comp Peak Ann_NW	15.5933%	163,325.41	7,796.65	
	C1005319A	Strip 38 - Phase 1 - Landover	34,068,034.57	6,000,000.00	Comp Peak Ann_NW	15.5933%	5,312,328.11	935,597.52	
	C1005319B	Strip 38 - Phase 1 - Landover	23,428,320.20	40,000,000.00	Comp Peak Ann_NW	15.5933%	3,653,246.38	6,237,316.80	
	C1005327	Strip 4 Dig#3 WOS	124,168.13	100,000.00	Comp Peak Ann_NW	15.5933%	19,361.90	15,593.29	
	C1005362	Bel Glade Depth of Cover	105,619.54	104,261.00	Comp Peak Ann_NW	15.5933%	16,469.56	16,257.72	
	C1005435	Strip 24 ILI - Barred Tee Curtis Rd	843,959.98	900,000.00	Comp Peak Ann_NW	15.5933%	131,601.14	140,339.63	
	C1005453	Crider Brook Way Depth of Cover	229,305.65	150,000.00	Comp Peak Ann_NW	15.5933%	35,756.30	23,389.94	
	C1005454	Strip 12 TIMP Dig	699,439.34	438,000.00	Comp Peak Ann_NW	15.5933%	109,065.62	68,298.62	
	C1005455	Strip 12 TIMP Dig location 2	531,023.58	443,400.00	Comp Peak Ann_NW	15.5933%	82,804.06	69,140.66	
	C1005683	Strip 15 ILI B2Bs - Ellicott & 44th	998,491.71	2,201,724.00	Comp Peak Ann_NW	15.5933%	155,697.73	343,321.25	
	C1005684	Strip 15 ILI B2B - Cleveland & 32nd	1,493,632.82	3,153,200.00	Comp Peak Ann_NW	15.5933%	232,906.53	491,687.68	
	C1005693	Strip 15 ILI B2Bs- woodland and 31s	1,274,091.46	2,856,000.00	Comp Peak Ann_NW	15.5933%	198,672.80	445,344.42	
	C1005714	Strip 24 ILI Validation Dig#2	154,571.67	200,000.00	Comp Peak Ann_NW	15.5933%	24,102.81	31,186.58	
	369003 - Trans-Meas Reg Sta Loop	C1002675D	Strip 1 W Phase 3 - Mainline Valves	246,428.87	250,000.00	Comp Peak Ann_NW	15.5933%	38,426.37	38,983.23
	C1002825	Ravensworth RCV Installation. Raven	596,748.43	583,000.00	Comp Peak Ann_NW	15.5933%	93,052.73	90,908.89	
	C1002971	Valve riser Strip 8 Valve 09. (40%)	214,788.70	-	Comp Peak Ann_NW	15.5933%	33,492.63	-	
	C1005051	ILI Readiness - Strip 24 - Launcher	2,306,027.13	1,590,000.00	Comp Peak Ann_NW	15.5933%	359,585.54	247,933.34	
	C1005068	Valve Replacement-Strip 1 Valve 13	1,685,999.40	500,000.00	Comp Peak Ann_NW	15.5933%	262,902.81	77,966.46	
	C1005121	RCV-Strip12 Pressure Reducing Stat	165,796.62	160,000.00	Comp Peak Ann_NW	15.5933%	25,853.15	24,949.27	
	C1005135	Strip 12 PRS #3 Non-ARP	266,577.58	160,000.00	Comp Peak Ann_NW	15.5933%	41,568.22	24,949.27	
	C1005171	EPR Replacement Project	185,551.55	50,000.00	Comp Peak Ann_NW	15.5933%	28,933.60	7,796.65	
	C1005221	Strip 14/15 Permanent Launcher	1,214,898.70	1,459,000.00	Comp Peak Ann_NW	15.5933%	189,442.70	227,506.13	
	C1005222	Strip 14/15 Barred Tee	161,725.94	563,000.00	Comp Peak Ann_NW	15.5933%	25,218.40	87,790.23	
	C1005236	Strip 24 Receiver - ILI Readiness	1,155,191.72	50,000.00	Comp Peak Ann_NW	15.5933%	180,132.42	7,796.65	
	C1005248	Brandywine Control Valves (Run #3)	536,388.50	370,000.00	Comp Peak Ann_NW	15.5933%	83,640.63	57,695.18	
C1005251	Gardiner Road CV Actuators	390,337.67	351,000.00	Comp Peak Ann_NW	15.5933%	60,866.49	54,732.45		
C1005252	Strip 18 Valve 9 Riser Repair	118,350.71	123,000.00	Comp Peak Ann_NW	15.5933%	18,454.77	19,179.75		
C1005256	Strip 23 Valve 9 Riser	175,234.53	125,000.00	Comp Peak Ann_NW	15.5933%	27,324.83	19,491.62		
C1005260	Strip 14 RCV Valve 5	2,478,730.01	2,571,000.00	Comp Peak Ann_NW	15.5933%	386,515.61	400,903.54		
C1005264	Strip 14 RCV Valve 2	2,355,916.81	2,627,000.00	Comp Peak Ann_NW	15.5933%	367,364.99	409,635.78		
C1005334	ILI Readiness Strip 14 Valve 3	168,669.18	50,000.00	Comp Peak Ann_NW	15.5933%	26,301.08	7,796.65		
C1005402	Strip 18 Valve 3 Riser	250,918.79	147,000.00	Comp Peak Ann_NW	15.5933%	39,126.50	22,922.14		
C1005403	Strip 2 Valve 1 Riser	239,343.12	144,000.00	Comp Peak Ann_NW	15.5933%	37,321.47	22,454.34		
C1005405	ILI Readiness - Strip 15 Valve 15	2,287,348.86	4,360,528.14	Comp Peak Ann_NW	15.5933%	356,672.99	679,949.89		
C1005406	ILI Readiness - Strip 15 Valve 12	1,514,882.23	3,135,856.50	Comp Peak Ann_NW	15.5933%	236,220.01	488,983.26		
C1005407	ILI Readiness - Strip 14 Valve 3	1,451,554.70	5,883,132.00	Comp Peak Ann_NW	15.5933%	226,345.16	917,373.95		
C1005408	Gardiner Road I Upgrade Phase 1A	592,201.62	532,480.00	Comp Peak Ann_NW	15.5933%	92,343.73	83,031.16		
C1005415	Strip 7 Valve 8	1,016,744.62	250,000.00	Comp Peak Ann_NW	15.5933%	158,543.96	38,983.23		
C1005440	Strip 38 PH7B - Reg Sta Brightseat	883,986.88	565,000.00	Comp Peak Ann_NW	15.5933%	137,842.66	88,102.10		
C1005448	RCV - Strip 02 - Valve 18 (VA)	3,384,095.23	10,000.00	Comp Peak Ann_NW	15.5933%	527,691.85	1,559.33		
C1005466	Strip 6 Valve 2 - ARP VLV Replac	1,589,919.24	1,352,000.00	Comp Peak Ann_NW	15.5933%	247,920.75	210,821.31		
C1005509	Strip 6 Valve 12 Replacement	1,401,747.13	2,075,724.00	Comp Peak Ann_NW	15.5933%	218,578.52	323,673.70		
C1005588	Strip 15 Valve 23 Replacement	2,477,044.77	150,000.00	Comp Peak Ann_NW	15.5933%	386,252.82	23,389.94		
C1005712	Reg0610 Inlet Valve Replacement	109,383.13	50,000.00	Comp Peak Ann_NW	15.5933%	17,056.43	7,796.65		
390003 - CNG Station Str Public Use	C1005288	Upgrade Slow Fill Infrastructures	108,180.36	110,000.00	Non_Genl_Plnt	18.5548%	20,072.60	20,410.23	
C1005289	Upgrade CNG Station-NW Station	127,263.22	150,000.00	Non_Genl_Plnt	18.5548%	23,613.37	27,832.13		
C1005557	Upgrade CNG Station - SE	298,171.80	175,000.00	Non_Genl_Plnt	18.5548%	55,325.03	32,470.81		
390004 - General-Struc&Improv Alloc	C1005186	4th Floor Window Tinting	154,804.17	75,000.00	Non_Genl_Plnt	18.5548%	28,723.53	13,916.06	
C1005279	Front Entry Steps Enhancements	128,312.12	75,000.00	Non_Genl_Plnt	18.5548%	23,807.99	13,916.06		
C1005287	Strip 38 - New Orchard Park (MNCPPC	700,582.62	695,547.59	Non_Genl_Plnt	18.5548%	129,991.36	129,057.12		
C1005301	Parking Garage Drainage	104,106.94	75,000.00	Non_Genl_Plnt	18.5548%	19,316.78	13,916.06		
C1005316	Asphalt Site Work-SE	123,340.50	75,000.00	Non_Genl_Plnt	18.5548%	22,885.52	13,916.06		
C1005342	Site Drainage and Walkways Enh	130,163.65	100,000.00	Non_Genl_Plnt	18.5548%	24,151.54	18,554.75		
C1005343	Concrete Site Enh & Apron Instal	129,215.86	75,000.00	Non_Genl_Plnt	18.5548%	23,975.68	13,916.06		
C1005353	NW Meter Storage	148,796.73	100,000.00	Non_Genl_Plnt	18.5548%	27,608.86	18,554.75		
C1005354	SE Building Enhancements	151,515.54	175,000.00	Non_Genl_Plnt	18.5548%	28,113.33	32,470.81		
C1005364	Bleacher Canopy-SC	109,055.99	60,000.00	Non_Genl_Plnt	18.5548%	20,235.07	11,132.85		
C1005383	Storage Container	140,851.87	40,000.00	Non_Genl_Plnt	18.5548%	26,134.71	7,421.90		
C1005385	Electric Meter Installation	130,070.88	50,000.00	Non_Genl_Plnt	18.5548%	24,134.33	9,277.38		
C1005492	Switchgear Equipment	174,297.08	75,000.00	Non_Genl_Plnt	18.5548%	32,340.39	13,916.06		
C1005505	Purchase/Install 200 KW fuel cell	844,980.00	900,000.00	Non_Genl_Plnt	18.5548%	156,783.93	166,992.76		
C1005542	Chiller VFD Upgrade SC	206,640.20	200,000.00	Non_Genl_Plnt	18.5548%	38,341.57	37,109.50		
C1005552	Install drainage / add asphalt - CH	135,535.94	75,000.00	Non_Genl_Plnt	18.5548%	25,148.36	13,916.06		
C1005556	Fence & Gates Installation - NW	141,636.37	130,000.00	Non_Genl_Plnt	18.5548%	26,280.28	24,121.18		

390004 - General-Struc&Improv Alloc	C1005577	Building Enhancements SE	136,808.82	100,000.00	Non_Genl_Plnt	18.5548%	25,384.54	18,554.75
391210 - General - Computer Equip	C1002647	Asset refresh - New Hardware	102,747.11	-	Non_Genl_Plnt	18.5548%	19,064.47	-
	C1005113	COVID-19. Computer Hardware	286,650.88	500,000.00	Non_Genl_Plnt	18.5548%	53,187.36	92,773.75
	C1005145	Mercury Regulator Replacement Progr	126,443.45	200,000.00	Non_Genl_Plnt	18.5548%	23,461.27	37,109.50
	C1005161	Data Centers Consolidations	454,115.54	750,000.00	Non_Genl_Plnt	18.5548%	84,260.01	139,160.63
	C1005299	End user OS Upg and Hard Refresh	1,110,377.72	738,095.00	Non_Genl_Plnt	18.5548%	206,027.82	136,951.69
394000 - General - Tool,Shop,Gar Eq	C1002576	Tie-in Equipment	524,709.31	-	Non_Genl_Plnt	18.5548%	97,358.50	-
	C1002864	Drawdown Compressor	508,002.88	-	Non_Genl_Plnt	18.5548%	94,258.67	-
	C1002912	Genl Plant - Shop & Garage Equipmen	265,591.37	-	Non_Genl_Plnt	18.5548%	49,279.82	-
	C1002940	Tie-in Equipment. Welding Shop - S	205,864.24	-	Non_Genl_Plnt	18.5548%	38,197.60	-
	C1005138	Insulators, AC Mitigation & related	308,876.03	500,000.00	Non_Genl_Plnt	18.5548%	57,311.18	92,773.75
	C1005142	RMLD Equipment for Leak Survey	357,734.41	357,734.41	Non_Genl_Plnt	18.5548%	66,376.73	25,976.65
	C1005234	Free Air Equipment	103,392.68	186,000.00	Non_Genl_Plnt	18.5548%	19,184.25	34,511.84
	C1005235	Tools Field Ops	605,869.24	275,060.00	Non_Genl_Plnt	18.5548%	112,417.53	51,036.70
	C1005238	Tie-in Equipment - Welding Shop	725,843.42	160,000.00	Non_Genl_Plnt	18.5548%	134,678.44	29,687.60
	C1005296	Genl Plant-Shop & Garage Equip	112,507.48	120,000.00	Non_Genl_Plnt	18.5548%	20,875.48	22,265.70
	C1005427	RMLD Gas Detection Equipment	263,788.31	250,000.00	Non_Genl_Plnt	18.5548%	48,945.26	46,386.88
	C1005430	Breathing Air Equipment	123,920.50	100,000.00	Non_Genl_Plnt	18.5548%	22,993.14	18,554.75
	C1005431	Safety Equipment for the field	359,643.13	128,000.00	Non_Genl_Plnt	18.5548%	66,730.89	23,750.08
	C1005432	Tools Field Operations	519,791.99	198,000.00	Non_Genl_Plnt	18.5548%	96,446.11	36,738.41
	C1005446	Gas Monitoring Equipment	120,406.91	30,000.00	Non_Genl_Plnt	18.5548%	22,341.20	5,566.43
	C1005447	Tie-in Equipment - Welding Shop	314,504.47	250,000.00	Non_Genl_Plnt	18.5548%	58,355.52	46,386.88
	C1005456	Gen Plant - Shop & Garage Equip	113,864.77	85,000.00	Non_Genl_Plnt	18.5548%	21,127.32	15,771.54
	C1005478	Mercury Testers	431,486.21	150,000.00	Non_Genl_Plnt	18.5548%	80,061.19	27,832.13
	C1005516	RMLD Gas Detection Equipment	121,402.55	120,000.00	Non_Genl_Plnt	18.5548%	22,525.94	22,265.70
	C1005517	RMLD Gas Detection Equip - Rovers	121,796.47	130,000.00	Non_Genl_Plnt	18.5548%	22,599.03	24,121.18
	C1005524	Gas Monitoring Equipment - Upgrade	438,175.73	200,000.00	Non_Genl_Plnt	18.5548%	81,302.41	37,109.50
	C1005541	Pipe Locating Equipment SC	380,486.73	300,000.00	Non_Genl_Plnt	18.5548%	70,598.36	55,664.25
	C1005589	Tools Field Operations	375,460.97	435,000.00	Non_Genl_Plnt	18.5548%	69,665.85	80,713.16
	C1005644	Gas Detection Equipment	1,100,308.64	1,200,000.00	Non_Genl_Plnt	18.5548%	204,159.52	222,657.01
	C1005672	RMLD Leak Detection Equipment	172,486.52	16,500.00	Non_Genl_Plnt	18.5548%	32,004.44	3,061.53
	C1005729	RMLD-CS Leak detection equipment	172,831.35	165,000.00	Non_Genl_Plnt	18.5548%	32,068.43	30,615.34
397100 - General - Comm Equipment	C1002257	Mobile WFM Pilot	545,327.09	-	Non_Genl_Plnt	18.5548%	101,184.08	-
	C1002729	SCADA - New SCADA System Software.	1,973,926.12	-	Non_Genl_Plnt	18.5548%	366,257.07	-
	C1005117	Frederick VPN	158,913.52	140,000.00	Non_Genl_Plnt	18.5548%	29,486.01	25,976.65
	C1005167	SCADA-Server Refresh	103,575.73	100,000.00	Non_Genl_Plnt	18.5548%	19,218.22	18,554.75
	C1005173	SCADA-ControlWave Comp Hardwa	183,598.88	110,000.00	Non_Genl_Plnt	18.5548%	34,066.31	20,410.23
	C1005196	LMR System Upgrade	4,303,020.93	4,000,000.00	Non_Genl_Plnt	18.5548%	798,414.80	742,190.02
	C1005206	Microwave Network Upgrade	5,446,966.21	3,700,000.00	Non_Genl_Plnt	18.5548%	1,010,670.99	686,525.77
	C1005212	Mobile Radio	2,335,168.78	510,000.00	Non_Genl_Plnt	18.5548%	433,284.74	94,629.23
	C1005244	Itron Mobile Radio	118,128.39	120,000.00	Non_Genl_Plnt	18.5548%	21,918.43	22,265.70
	C1005247	SE Tower Foundation Repair	271,667.92	300,000.00	Non_Genl_Plnt	18.5548%	50,407.30	55,664.25
	C1005292	SCADA-server upgrade-Upgrade	407,436.54	240,000.00	Non_Genl_Plnt	18.5548%	75,598.83	44,531.40
	C1005293	RF COMM- Telemetry battery upgrade	142,761.76	130,000.00	Non_Genl_Plnt	18.5548%	26,489.09	24,121.18
	C1005421	Itron Mobile Radio	120,152.24	55,000.00	Non_Genl_Plnt	18.5548%	22,293.95	10,205.11
398000 - General - Misc Equipment	C1005213	Misc Gen Equip-DriveCam	212,621.86	225,000.00	Non_Genl_Plnt	18.5548%	39,451.46	41,748.19
01 DC Washington Gas Light Company			123,414,127.15	38,170,546.35				
369002 - Trans-Meas Reg Sta Spur	W1000256	Strip 9 - Spur Valve 12	1,036,131.73	250,000.00				
	W1000259	Modern to Radio Conversions	166,294.35	100,000.00				
376100 - Distr - Mains - Steel	3356613	DC AOP - MASSACHUSETTS AVE NW - PHA	867,340.10	40,522.89				
	3376699	AOP - CLEVELAND PARK STREETSCAPE -	1,798,016.67	40,626.91				
	3471454	AOP - PENN. AVE SE & MINN. AVE SE I	1,398,875.22					
	3485852	PIPES 2.0 DC APRP 1 - F.O. - MASS A	249,245.41					
	3510522	HILL EAST - BLDG F1	159,779.32					
	3529387	DC APRP 4 - AOP - CLEVELAND PARK -	223,679.66					
	3568602	DC APRP 4 - AOP - KENNEDY ST NW PH	179,458.89					
	3583952	DC APRP 4 - AOP - KENNEDY ST NW PH	157,235.68					
	3583965	PAVING	160,842.24					
	3611901	AOP - BILLABLE @ 0% - 215 G ST NE -	251,517.37					
	3682342	AOP - BILLABLE @ 100% - 60 I ST SW	155,861.74					
	3716104	DC APRP 4-LAMONT ST NW-C006NW1 - WA	146,432.23					
	3723104	DC AOP - S ST NW REVITALIZATION 4TH	300,395.29					
	3762809	DC EMMR - CANAL RD NW - I003NW3 - W	448,942.82					
	3769833	DC AOP - BILLABLE @100% - WMATA SQ	585,517.98					
	3827497	DC APRP 4 - RANDOLPH ST NW - B008NW	100,289.68					
	3833590	DC APRP 2 - MONTANA AVE NE - D006NE	730,235.06					

376100 - Distr - Mains - Steel	3918519	DC AOP - BILL @ 0% - BRENTWOOD RD N	228,569.24	
	3933012	DC F.O. - APRP 4 - 17TH ST NE	350,404.64	
	W1000257	Distribution Repl-Main-Other	152,380.54	200,000.00
376200 - Distr - Mains - Plastic	1113746	DC ARP 2 - WATERSIDE DR NW (OPTIMAL	318,723.36	262,174.00
	1685789	DC APRP 2 - HAWTHORNE LA NW - WARD	309,194.47	288,919.99
	2287084	DC APRP 2 - MOUNT OLIVET RD NE - WA	498,471.55	-
	2964031	DC APRP 2 - EASTERN AVE - WARD 4 -	420,031.05	-
	2969123	THE YARDS PARCEL O 1300 4TH ST SE	119,044.79	-
	3046682	OREGON AVE NW MILITARY WESTERN AVE	197,020.30	447,419.35
	3220560	1815 COLUMBIA RD NW	197,537.79	9,833.95
	3314160	1270 4TH ST NE	230,597.13	8,052.87
	3324595	THE PARKS @ WALTER REED - BLDGS A/B	210,288.74	-
	3356613	DC AOP - MASSACHUSETTS AVE NW - PHA	1,911,178.11	81,045.78
	3365453	AOP - DDOT I295 SAFETY & GEOMETRIC	803,511.69	38,668.65
	3376135	DC INT - FIELD OPS - 4121 9TH ST NW	993,135.04	155,247.93
	3376699	AOP - CLEVELAND PARK STREETScape -	1,289,779.11	40,626.91
	3405216	AOP - MONROE BRIDGE REPL BETWN 8TH	795,228.69	
	3419838	DC BILLABLE @ 100% - 965 FLORIDA AV	155,763.33	
	3432874	DC AOP - RECONSTRUCTION OF FLORIDA	104,079.48	
	3454683	1501 14TH ST NW -STUDIO THEATRE**NE	227,432.96	
	3471454	AOP - PENN. AVE SE & MINN. AVE SE I	2,101,298.60	
	3471921	614 14TH ST NW	246,496.03	
	3478615	DC AOP - MASSACHUSETTS AVE NW - PHA	3,079,160.36	
	3478617	DC AOP - MASSACHUSETTS AVE NW - PHA	2,487,236.06	
	3480905	DC INT - ASPEN ST NW - A013NW - WAR	466,069.32	
	3485852	PIPES 2.0 DC APRP 1 - F.O. - MASS A	3,020,646.24	
	3502037	DC AOP - REHABILITATION C ST NE - W	702,911.79	
	3507723	5816 GEORGIA AVE NW	110,599.08	
	3510522	HILL EAST - BLDG F1	352,261.17	
	3526349	THE LEXINGTON	115,938.60	
	3529387	DC APRP 4 - AOP - CLEVELAND PARK -	5,073,605.90	
	3568602	DC APRP 4 - AOP - KENNEDY ST NW PH	1,055,649.65	
	3574773	2131 9TH ST NW	146,545.79	
	3583952	DC APRP 4 - AOP - KENNEDY ST NW PH	1,645,341.36	
	3583965	PAVING	1,562,300.40	
	3583966	DC APRP 4 - AOP - KENNEDY ST NW PH	354,423.92	
	3586994	DC APRP 2 - 49TH ST NW - M009NW - W	434,327.60	
	3586996	F.O. - PIPES 2.0 APRP 4 - W PL NW	1,263,835.45	
	3587864	F.O. - PIPES 2.0 APRP 4 - MORRIS RD	545,151.19	
	3588021	DC APRP 4 - AOP - REHABILITATION C	1,015,192.03	
	3588022	DC APRP 4 - AOP - REHABILITATION C	1,008,039.05	
	3588023	DC APRP 4 - AOP - REHABILITATION C	1,340,195.34	
	3589296	1371 I ST NW-FRANKLIN PARK RENOV	248,425.10	
	3597632	300 & 325 MORSE ST NE - BLDG A & B	329,339.70	
	3599281	PIPES 2.0 - DC F.O. - APRP 4 - MASS	227,145.20	
	3600264	DC AOP - 16TH ST NW BUS LANES - D00	283,568.30	
	3622165	MORSE ST NE	255,116.94	
	3625930	AOP - FLORIDA AVE NE FROM 2ND ST NE	650,452.33	
	3630617	TPWR - BLDG IJ-O-P	746,530.04	
	3630683	1000 S CAPITOL ST SE	446,916.01	
	3637933	AOP - BILLABLE @100% - K ST NW - H0	168,065.01	
	3648779	DC AOP - PENNSYLVANIA AVE NW - E002	2,332,665.96	
	3648780	DC AOP - PENNSYLVANIA AVE NW - E002	334,381.55	
	3652347	AOP - FLORIDA AVE NE FROM 2ND ST NE	744,035.15	
	3652356	AOP - FLORIDA AVE NE FROM 2ND ST NE	4,118,204.80	
	3678298	DC APRP 4 - AOP - ASPEN ST NW - C01	108,709.47	
	3682342	AOP - BILLALBE @ 100% - 60 I ST SW	217,569.12	
	3692507	17 MISSISSIPPI AVE SE	634,516.87	
	3696948	1 FLORIDA AVE NE	179,026.35	
	3712220	DC AOP - BILLABLE @ 100% - CLARION	145,390.73	
	3715687	DC APRP 2 - SEDWICK ST NW - WARD 3	589,468.10	
	3716077	DC APRP 2-34TH ST NW-I006NW - WARD	504,172.06	
	3716086	DC APRP 4 - WALTER ST SE - C001SE2	469,788.91	
	3716104	DC APRP 4-LAMONT ST NW-C006NW1 - WA	570,456.84	
	3716125	DC APRP 2 - VERPLANCK PL NW - K008N	2,253,442.16	
	3716365	DC APRP 2 - MACARTHUR BLVD NW - WAR	1,118,722.79	

376200 - Distr - Mains - Plastic	3716366	DC APRP 2 - HOLBROOK ST NE - WARD 5	137,739.66	
	3723104	DC AOP - S ST NW REVITALIZATION 4TH	888,274.16	
	3728011	DC APRP 4 - 40TH ST - WARD 7 - OPT	1,064,077.71	
	3729602	FT MCNAIR -2ND AVE SW	464,787.16	
	3729615	FT MCNAIR -2ND AVE SW	812,429.86	
	3734956	1224 M ST NW	102,398.81	
	3747154	575 3RD ST NW	243,009.44	
	3747614	DC AOP - S ST NW 4TH TO 7TH - WARDS	429,449.69	
	3749270	DC APRP 10 - AOP - CONNECTICUT AVE	1,555,466.16	
	3750993	50 FLORIDA AVE NE	133,880.59	
	3751375	PKS @ WALTER REED BLDG 6 & 7	309,668.22	
	3755822	DC F.O. - APRP 4 - 4TH ST NE - B004	345,215.00	
	3757259	CITY RIDGE - 3900 WISCONSIN AVE NW	989,765.18	
	3757643	DC F.O. - APRP 2 - RHODE ISLAND AVE	599,709.18	
	3759654	DC BILLABLE @100% - STATE DEPT - D	353,666.31	
	3760007	DC BILLABLE @100% - 500 INDIANA AVE	153,345.75	
	3762809	DC EMMR - CANAL RD NW - I003NW3 - W	685,203.55	
	3770073	CUA/CONWAY SCH OF NURSING-615 ALUMN	111,314.75	
	3770437	ARLO HOTEL - 333 G ST NW	258,233.40	
	3771605	DC F.O. - APRP 4 - CUMBERLAND ST NW	735,172.40	
	3774719	DC F.O.- EMMR - 16TH ST NW - D006NW	334,610.10	
	3775214	734 15TH ST NW - DMBI	210,167.15	
	3784869	FREDERICK DOUGLAS HSE-1411 W ST SE	491,152.71	
	3795010	The V Building at Georgia Ave - 355	153,325.17	
	3795113	DC APRP 4 - EMERALD ST NE - D002NE3	985,355.00	
	3827477	DC APRP 3 - SEDGWICK ST NW - L008NW	1,873,344.48	
	3827497	DC APRP 4 - RANDOLPH ST NW - B008NW	340,355.49	
	3827859	DC APRP 4 - LONGFELLOW ST NW - B010	315,365.56	
	3833590	DC APRP 2 - MONTANA AVE NE - D006NE	211,391.78	
	3835820	DC F.O. - DC APRP 2 - LUZON AVE - D	2,036,281.54	
	3864271	DC APRP 4 - SHEPHERD ST NW - B008NW	229,822.32	
	3915848	DC AOP - BILLALBE @ 100% - 25 M ST	112,116.66	
	W1000246	Distribution Repl,Mains Repl, Other	322,202.49	210,000.00
	W2132200	FY21 Blanket Rider for Cutouts on M	117,166.50	1,000,000.00
	W2232200	FY22 Blanket Rider for Cutouts	2,670,145.17	12,000,000.00
	W2232200E	FY22 Blanket Rider for Cutouts	159,527.34	2,000,000.00
	W2332200	FY23 Blanket Rider-Cutouts on Mains	3,146,067.97	4,200,000.00
	W2332200E	FY23 Blanket Rider-Cutouts on Mains	1,166,162.65	147,001.00
	W1000237	Regulator Replacement (019), 42nd S	197,848.81	-
378002 - Distr - Meas & Reg Sta	AGG0102479	AGG0102479	116,096.73	
380100 - Distr - Services - Steel	AGG0281515	DC APRP 10 - AOP - Florida Ave NE 2	745,084.90	
	AGG0286503	DC APRP 4 - AOP - Massachusetts Ave	258,937.74	
	AGG0287031	DC APRP 4 - AOP - KENNEDY ST NW - W	391,739.02	
	AGG0287923	AGG0287923	126,859.33	
	AGG0292257	DC APRP 4 - F.O. - 300 BLK 10th St	267,292.42	
	AGG0295352	DC F.O. - APRP 4 - W PL NW - I005N	105,562.89	
	AGG0298472	DC APRP 10 - PLUG - Feeder 15009 -	211,995.01	
	AGG0299394	DC APRP 2 - VERPLANCK PL NW - K008N	100,124.21	
	AGG0299764	DC F.O. - APRP 4 - 4TH ST NE - B004	159,819.86	
	AGG0300025	DC F.O. - APRP 4 - 40TH ST - Ward 7	106,325.11	
	AGG0300052	FT MCNAIR RESIDENTIAL - 2ND AVE SW	122,532.11	
	AGG0300162	DC APRP 3 - Kennedy St NE - B010NE	108,156.44	
	AGG0300773	DC APRP 1 - L St NE - A003NE - Ward	103,693.07	
	AGG0300969	DC APRP 4 - EMERALD ST NE - D002NE3	123,060.39	
	AGG0300976	DC APRP 3 - SEDGWICK ST NW - L008NW	170,986.61	
	AGG0301134	DC APRP 1 - MICHIGAN AVE NE - B007N	139,168.12	
	AGG0301164	DC APRP 1 - HAMILTON ST NW - A010NW	107,580.14	
	AGG0303117	DC APRP 4 - RANDOLPH ST NW - B008NW	156,071.70	
	AGG0304053	APRP 1 - FAIRMONT ST NW - C006NW4 -	134,757.46	
	AGG0304059	APRP 1 - W ST NW - C005NW - Ward 1	125,521.51	
	AGG0304062	APRP 1 - RESERVOIR RD NW - J004NW -	199,711.39	
	AGG0304063	APRP 1 - 37TH ST NW - J004NW - Ward	195,875.47	
380200 - Distr - Services - Plastic	2963739	DC APRP 2 - HARRISON ST NW - WARD 3	595,400.46	1,206,906.12
	3256581	ABAND GAS SERV AT MAIN === 705 4TH	109,273.58	-
	3596014	DC AOP - 16TH ST NW BUSLANES - D002	724,841.64	
	3914877	REPLACE STEEL SERVICE PER RAYMOND F	114,828.69	

380200 - Distr - Services - Plastic

AGG0102479	AGG0102479	287,917.34
AGG0146242	AGG0146242	277,860.50
AGG0169482	AGG0169482	312,842.97
AGG0219260	AGG0219260	179,921.47
AGG0281515	DC APRP 10 - AOP - Florida Ave NE 2	2,147,113.93
AGG0285137	DC APRP 4 - AOP - REHABILITATION C	185,004.58
AGG0286503	DC APRP 4 - AOP - Massachusetts Ave	581,892.18
AGG0287031	DC APRP 4 - AOP - KENNEDY ST NW - W	1,132,595.18
AGG0288107	AGG0288107	123,321.84
AGG0288830	AGG0288830	122,923.75
AGG0291301	AGG0291301	257,026.55
AGG0292257	DC APRP 4 - F.O. - 300 BLK 10th St	924,719.94
AGG0293819	DC APRP 4 - AOP - CLEVELAND PARK - JOSEPHITE TOWNHSES	104,464.52
AGG0293829		169,345.72
AGG0295010	DC AOP - Connecticut Ave NW Streets	127,608.60
AGG0295352	DC F.O. - APRP 4 - W PL NW - I005N	609,942.66
AGG0295414	DC APRP 4 - F.O. - MORRIS RD SE - D	113,307.03
AGG0297069	STANTON SQ TWNHSES - JAMES BANKS RD	144,570.29
AGG0297357	DC APRP 10 - AOP - S St NW Revitali	119,115.73
AGG0298472	DC APRP 10 - PLUG - Feeder 15009 -	771,402.94
AGG0299376	DC APRP 2 - Sedgwick ST NW - M008NW	136,694.69
AGG0299378	1226 WALTER ST SE	457,941.66
AGG0299392	DC APRP 4 - Lamont St NW-C006NW1 -	141,731.44
AGG0299394	DC APRP 2 - VERPLANCK PL NW - K008N	314,852.65
AGG0299512	DC APRP 10 - MLK Jr. Ave SE Phase	786,205.60
AGG0299764	DC F.O. - APRP 4 - 4TH ST NE - B004	441,768.88
AGG0300025	DC F.O. - APRP 4 - 40TH ST - Ward 7	341,104.79
AGG0300052	FT MCNAIR RESIDENTIAL - 2ND AVE SW	654,980.68
AGG0300153	DC APRP 1 - Wesley Pl SW - B002SW -	117,796.41
AGG0300159	DC APRP 3 - Division Ave NE - L001N	195,809.95
AGG0300162	DC APRP 3 - Kennedy St NE - B010NE	275,563.18
AGG0300164	DC APRP 3 - 6TH St SE - B010SE - Wa	192,366.01
AGG0300176	DC APRP 3 - Eastern Ave - A012NE -	120,267.97
AGG0300699	DC AOP - S ST NW 4TH TO 7TH - WARDS	342,291.60
AGG0300773	DC APRP 1 - L St NE - A003NE - Ward	180,508.19
AGG0300960	DC F.O. - APRP 2 - RHODE ISLAND AVE	143,326.91
AGG0300969	DC APRP 4 - EMERALD ST NE - D002NE3	861,875.53
AGG0300976	DC APRP 3 - SEDGWICK ST NW - L008NW	736,090.83
AGG0301132	DC APRP 1 - INGRAHAM ST NE - B010NE	128,429.46
AGG0301134	DC APRP 1 - MICHIGAN AVE NE - B007N	146,066.84
AGG0301141	DC APRP 1 - KEEFER PL NW - B006NW1	118,110.37
AGG0301143	DC APRP 1 - RHODE ISLAND AVE NW - C	122,966.41
AGG0301144	DC APRP 1 - G ST SE - C002SE1 - War	171,748.55
AGG0301146	DC APRP 1 - GALLATIN ST NW - A010NW	131,936.71
AGG0301151	DC APRP 1 - RHODE ISLAND AVE NW - D	162,946.87
AGG0301162	DC APRP 1 - 8TH ST SE - B001SE4 - W	113,544.89
AGG0301164	DC APRP 1 - HAMILTON ST NW - A010NW	164,057.69
AGG0301165	DC APRP 1 - 8TH ST SE - C001SE1 - W	122,986.18
AGG0301190	DC APRP 3 - A ST SE - L001SE - Ward	100,219.66
AGG0301193	DC APRP 3 - 3RD ST SE - A001SE - Wa	104,644.57
AGG0301204	DC APRP 5 - 8TH ST NW - C012NW4 - W	225,200.55
AGG0301208	DC APRP 5 - 4TH ST NE - B003NE2 - W	167,506.19
AGG0301215	DC APRP 3 - G ST SW - A002SW1 - War	151,329.30
AGG0302040	DC - OPT 188687 - JEFFERSON ST NE -	120,145.75
AGG0302389	DC APRP 10 - Metro Branch Trail fro	205,310.87
AGG0303117	DC APRP 4 - RANDOLPH ST NW - B008NW	469,834.25
AGG0303121	DC APRP 4 - LONGFELLOW ST NW - B010	214,668.66
AGG0303140	DC APRP 2 - OPT 3874144 - Q St SE -	268,007.46
AGG0303250	DC APRP 4 - SHEPHERD ST NW - B008NW	163,629.04
AGG0303646	DC F.O. - DC APRP 2 - Luzon Ave NW	377,263.73
AGG0303992	APRP 1 - 16TH ST NW - D015NW - Ward	220,928.80
AGG0303994	APRP 1 - HADFIELD LN NW - K004NW -	181,137.10
AGG0303999	APRP 1 - MILITARY RD NW - I011NW -	124,201.56
AGG0304003	APRP 1 - GROFF CT NE - B002NE3 - Wa	119,177.17
AGG0304004	APRP 1 - MASSACHUSETTS AVE NW - L00	106,523.74
AGG0304025	APRP 1 - L ST NE - C003NE - Ward 6	103,396.24

380200 - Distr - Services - Plastic	AGG0304028	APRP 1 - 13TH ST NE - D006NE - Ward	127,230.15	
	AGG0304037	APRP 1 - GARFIELD ST NW - G006NW -	102,770.63	
	AGG0304040	APRP 1 - GEORGIA AVE NW - C014NW -	109,839.70	
	AGG0304046	APRP 1 - PENNSYLVANIA AVE SE - F003	114,496.08	
	AGG0304053	APRP 1 - FAIRMONT ST NW - C006NW4 -	297,291.61	
	AGG0304059	APRP 1 - W ST NW - C005NW - Ward 1	287,626.38	
	AGG0304060	APRP 1 - 47TH ST NW - B009NW4 - War	107,512.54	
	AGG0304062	APRP 1 - RESERVOIR RD NW - J004NW -	250,543.38	
	AGG0304063	APRP 1 - 37TH ST NW - J004NW - Ward	263,485.74	
	AGG0304073	APRP 1 - RENO RD NW - I009NW - Ward	119,252.24	
	AGG0304117	APRP 3 - TAYLOR ST NW - C008NW - Wa	129,809.89	
	AGG0304143	DC APRP 5 - 11TH ST NE - C009NE2 -	103,929.27	
	AGG0304144	DC APRP 5 - DELAFIELD PL NE - C009N	176,788.89	
	AGG0304145	DC APRP 5 - SAVANNAH PL SE - E006SE	265,931.46	
	AGG0304147	DC APRP 5 - 20TH ST SE - E006SE - W	122,018.83	
	AGG0304149	DC APRP 5 - LEE ST NE - K003NE - Wa	179,774.29	
	AGG0304151	DC APRP 5 - 49TH ST NE - K003NE - W	236,177.02	
	AGG0304152	DC APRP 5 - MEADE ST NE - K003NE -	223,547.64	
	AGG0305429	DC APRP 1 - DAVIS PL NW - K005NW -	170,201.51	
	W2234000	FY22 Blanket - Service	819,806.44	3,000,000.00
	W2234000E	FY22 Blanket - Service Repl	272,393.57	370,000.00
	W2334000E	FY23 Blanket - Svc/Riser Replace	120,476.12	388,500.00
381200 - Distr - Meters - HardCase	W2135000	CY21 Blanket-Meters	118,677.04	750,000.00
	W2235000	CY22 Blanket-Meters	1,470,745.05	5,320,000.00
	W2435000	CY24 Blanket-Meters	560,176.53	1,800,000.00
381300 - Distr - Meters -Index Corr	W22350N1	CY22 Blanket-Correcting Instruments	104,383.36	380,000.00
382000 - Distr - Meter Install	AGG0290698	AGG0290698	226,859.91	
397203 - General - Comm Equip Ensca	W2364500	CY23 Blanket-AMR Devices	362,557.78	2,610,000.00
	W2464500	CY24 Blanket-AMR Devices	331,521.06	825,000.00
Grand Total			400,914,788.40	260,009,510.58

CUBE:	DC Rate Case	
tm1serv:Study#	Study#292	Study#291
tm1serv:Jurisdiction		
tm1serv:PB_to_RM_Period	Mar-2024	Mar-2024
Comp_A&G	19.54%	19.60%
Three_Part_Factor	18.64%	18.74%
Total_Labor	19.36%	19.38%
Firm Weather_NW	14.70%	14.70%
Avg_Meters	13.86%	13.86%
Dist_X_Admin	22.86%	22.87%
Tot_Dist_Plnt	19.28%	19.47%
Genl_Plnt	18.64%	18.77%
Dist_X_Admin	22.86%	22.87%
Mtr_Hse_Reg_Plnt	15.89%	15.66%
Dist_Meas_Reg_Plnt	59.51%	59.72%
Dist_Maint_Exp	22.70%	22.70%
Total Weather All_NW	16.48%	16.48%
Transmission_Plnt	15.14%	14.95%
Tot_Dist_Plnt	19.28%	19.47%
Dist_Mains_Plnt	21.33%	21.43%
Firm_Pipe_Ann_Sales_Adj	13.40%	13.40%
Annual Firm_ACT	14.44%	14.44%
Firm Weather_NW	14.70%	14.70%
Annual Firm_NW	14.53%	14.53%
Total Weather All_NW	16.48%	16.48%
Annual Total_NW	16.88%	16.88%
Pipeline_NW	16.88%	16.88%
Firm Pipe Ann Adj	14.53%	14.53%
Peak Day Weather	14.32%	14.32%
Peak Day Base	14.14%	14.14%
Peak Day Total	14.31%	14.31%
Comp Peak Ann_NW	15.59%	15.59%
Non_Genl_Plnt	18.55%	18.69%
Genl_Plnt	18.64%	18.77%
Tot_GPIS_X_Pepco	18.56%	18.69%
Net_GPIS	18.62%	18.94%
Net_Rate_Base	19.08%	19.37%
Adj_CWIP	37.13%	36.59%
Total_Labor	19.36%	19.38%
Direct Labor \$	21,946,567	21,963,473
Nongas_Oper_Exp	17.81%	17.85%
Wintr_Pipe_NW	16.79%	16.79%
Avg_Meters	13.86%	13.86%
Comp_A&G	19.54%	19.60%
Three_Part_Factor	18.64%	18.74%
O & M_Adjusted	19.97%	19.97%
Gas Purchased Lag Days	3818.99%	3818.99%
Transmission_Plnt	15.14%	14.95%
Dist_X_Admin	22.86%	22.87%
Tot_Dist_Plnt	19.28%	19.47%
Dist_Mains_Plnt	21.33%	21.43%
Dist_Meas_Reg_Plnt	59.51%	59.72%
Dist_Maint_Exp	22.70%	22.70%
Mtr_Hse_Reg_Plnt	15.89%	15.66%
Appl_Svc_X_Admin	7.11%	7.11%
Direct_SOCP	3.43%	3.43%
Direct_Meter_Exp	7.20%	7.20%

ATTESTATION

I, ROBERT E. TUORINIEMI, whose Testimony accompanies this Attestation, state that such testimony was prepared by me or under my supervision; that I am familiar with the contents thereof; that the facts set forth therein are true and correct to the best of my knowledge, information and belief; and that I adopt the same as true and correct.



ROBERT E. TUORINIEMI



DATE

**WITNESS MORROW
EXHIBIT WG (21)**

BEFORE THE
PUBLIC SERVICE COMMISSION OF THE
DISTRICT OF COLUMBIA

IN THE MATTER OF

THE APPLICATION OF WASHINGTON GAS
LIGHT COMPANY FOR AUTHORITY TO
INCREASE EXISTING RATES AND
CHARGES FOR GAS SERVICE

FORMAL CASE NO. 1180

WASHINGTON GAS LIGHT COMPANY
District of Columbia

SUPPLEMENTAL DIRECT TESTIMONY OF FREDERICK J. MORROW
Exhibit WG (2I)

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II.	Summary of Exhibits	2
III.	Project Performance and Variance	3

Exhibits

	<u>Title</u>	<u>Exhibit</u>
	Total Project Charges for Capital Projects over \$100k.....	Exhibit WG (2I)-1

WASHINGTON GAS LIGHT COMPANY

DISTRICT OF COLUMBIA

SUPPLEMENTAL DIRECT TESTIMONY OF FREDERICK J. MORROW

Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is Frederick John Morrow III. I am the Director of Construction for the District of Columbia for Washington Gas Light Company (“Washington Gas” or the “Company”). My business address is 6801 Industrial Road, Springfield, VA 22151.

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS PROCEEDING?

A. Yes, I previously submitted Direct Testimony, Exhibit WG (I), together with Exhibit WG (I) – 1 through Exhibit WG (I) – 3, filed on August 5, 2024.

I. PURPOSE OF SUPPLEMENTAL TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. The purpose of my supplemental direct testimony is to address certain elements identified in the Commission’s Order No. 22311, issued in Formal Case No. 1180 on October 9, 2024.¹ Specifically, Order No. 22311, at page 3, section 3, directed Washington Gas to provide supplemental direct testimony on topics requested by the District of Columbia Government (“DCG”) and the Apartment and Office Building Association of Metropolitan Washington

¹ Formal Case No. 1180, *In the Matter of the Application of Washington Gas Light Company for Authority to Increase Existing Rates and Charges for Gas Service*, Order No. 22311 (October 9, 2024).

1 (“AOBA”). My supplemental direct testimony responds to topics requested by
2 DCG, as identified in Sections II and III, below. Specifically, my exhibit supports
3 my supplemental direct testimony and provides the information requested by
4 DCG as reflected in Order No. 22311, which directed the Company “to file
5 detailed tables showing the capital additions represented by each itemized
6 project over \$100,000, the remaining capital additions, the capital retirements,
7 and the resulting net change in in plant in service for each FERC account from
8 the approved values in *Formal Case No. 1169*.” My supplemental direct
9 testimony provides support and background for this exhibit. In addition, I explain
10 “[H]ow WGL tracks changes and variance project scope and cost,” as directed
11 by Order No. 22311.
12

13 II. SUMMARY OF EXHIBIT

14 **Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR TESTIMONY?**

15 A. Yes, I sponsor the following exhibit:

16 I. Exhibit WG (2I) – 1: Total Project Charges for Capital
17 Projects Over \$100,000.

18 **Q. HAS THE COMPANY PREPARED AN ANALYSIS OF PROJECTS WITH A
19 COST OF MORE THAN \$100,000?**

20 A. Yes. In response to Commission Order No. 22311, the Company
21 prepared an analysis of projects with a cost over \$100,000. That analysis is
22 included with my supplemental direct testimony as Exhibit WG (2I) – 1. The
23 analysis includes the elements required in Order No. 22311: project need;
24 budgeted and actual cost; cost variance (and any associated forms); and FERC
25 account number. Projects with a cost over \$100,000 fall largely into the

1 categories of accelerated pipe replacement projects (“APRP”), safety and
2 maintenance capital; and new business and market enhancement projects.
3 Exhibit WG (2I)-1 provides an explanation for projects with positive variances
4 greater than 5%. I note that some of the projects included in the exhibit are
5 pending completion.

6 **Q. DOES EXHIBIT WG (2I) – 1 PROVIDE ANY OTHER INFORMATION?**

7 A. Yes. As further required by Order No. 22311, Exhibit WG (2I) – 1 shows
8 the capital additions with a project cost over \$100,000, the remaining capital
9 additions added during the historic test year, the capital retirements, and the
10 resulting net change in plant in service for each FERC account from the approved
11 values in *Formal Case No. 1169* that is discussed in Company Witness Robert E.
12 Tuoriniemi’s Supplemental Direct Testimony.

13
14 **III. PROJECT PERFORMANCE AND VARIANCE**

15 **Q. HOW DOES THE COMPANY TRACK PROJECT PERFORMANCE TO**
16 **IDENTIFY VARIANCES?**

17 A. The majority of the capital projects with a cost over \$100,000 were for the
18 retirement of distribution assets within the accelerated pipe replacement
19 program. For these projects, once the project has gone through the engineering
20 process described in Company Witness Murphy’s testimony, the Company’s
21 Project Management and Construction teams meet regularly, including with
22 stakeholders and contractors, to discuss planning, status, execution, progress,
23 priorities, and risks/impediments related to projects. These meetings also
24 provide an opportunity to identify and coordinate on project restoration.
25 Meetings include a bi-weekly Project Management meeting, contractor

1 meetings, permitting meetings and project close-out meetings. This process
2 allows the Company to monitor progress and the accuracy of the project
3 schedule, to enable the Company to timely determine and communicate project
4 delays or expedited project progress and/or milestones that are at risk. In
5 addition, Construction and the Project Management team maintain a project
6 workbook that is updated based on information from contractors and
7 Construction management on project performance and challenges, as well as
8 current contractor crew resources deployed. Project variances are continuously
9 documented during these meetings and reviewed during the project closeout
10 meeting. Variance explanations are finalized and submitted to the Commission
11 as part of the Company's semi-annual and annual reports for any Commission-
12 approved program where a project's Business Case Authorization ("BCA") had
13 a variance of plus or minus 5% on any closed BCA.

14 **Q. DOES THE COMPANY PROVIDE THE SAME VARIANCE REPORTING FOR**
15 **NEW CONSTRUCTION AND SAFETY AND MAINTENANCE PROJECTS?**

16 A. No, although the Company does generally follow the same oversight
17 process for these other categories of capital projects. However, since the
18 estimate for these projects, for budgeting purposes, is based on the average
19 system cost based on similar project and pipe size, the Company does not do a
20 detailed variance analysis.

21 **Q. PLEASE DESCRIBE HOW THE COMPANY MANAGES FIELD-RELATED**
22 **CHANGES THAT LEAD TO A VARIANCE.**

23 A. In line with the management of the accelerated pipeline replacement
24 program practices, prior to any field related changes that deviate from the
25 designed standard installation, the construction contractor contacts the

1 assigned Washington Gas management personnel for review and authorization.
2 No change is approved until it is reviewed and agreed to by Company
3 management personnel. Typical reasons for approval of field changes
4 requested by construction contractors include, but are not limited to:

- 5 ○ Offsets in the route of the lines (horizontally or vertically) based on
6 preexisting but unknown at design underground utilities;
- 7 ○ Unknown sections of rock that are encountered that need specialized
8 equipment to clear;
- 9 ○ Discovery of underground structures (like underground tunnel shafts,
10 buried vaults and parking structures) that protrude into the Public Space
11 Right of Way requiring a re-routing or offset from the original design; and
- 12 ○ Terraced properties or deep facilities that require excavations of greater
13 than 10 feet, thus requiring extensive protective shoring devices or
14 sloping, for worker safety.

15 Additional activities periodically encountered, and which must be
16 addressed, include but are not limited to, extensive landscaping, carpentry costs
17 related to relocating interior piping and meter build-ups to the exterior, or other
18 services or materials required to restore the customers property to an as-found
19 condition.

20 **Q. HOW DO CONSTRUCTION SUPERVISORS KEEP TRACK OF FIELD-**
21 **RELATED VARIANCES?**

22 A. It has been a long-standing policy for the Company's Construction
23 Supervisors to log pay items requiring pre-approval, which includes costs
24 related to field changes, as part of their oversight responsibilities. With the
25 implementation and expanded use of mobile devices, Washington Gas

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developed a tool to facilitate a consistent process for logging all pay items that require pre-approval by construction management personnel. Once pre-approved, the actual units/quantities used in the field are updated and reviewed by the Construction Supervisor for clarity, completeness, and accuracy. In addition, the Company's Construction Management department created two project manager positions to prepare and track project schedules, assess trends affecting schedules, collect and organize appropriate final project documentation, scope and cost changes, and manage critical path issues to successful project completion.

Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL DIRECT TESTIMONY?

A. Yes, it does, subject to the reservation of rights included in the Company's cover letter.

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
73500		376200 - Distr - Mains - Plastic	DC AOP - OREGON AVE NW - Ward 4 - STP-4174(0001)	Safety and Maintenance	Main relocations required to avoid conflicts with proposed infrastructure under DDOT Reconstruction of Oregon Ave Project No. STP-4174(0001)	\$612,397	\$197,020	-68%	N/A
102479		376200 - Distr - Mains - Plastic 380100 - Distr - Services - Steel 380200 - Distr - Services - Plastic	DC F.O. - APRP 2 - WATERSIDE DR NW - WARD 2 - OPT76865	APRP	Risk Based - FO Identified	\$1,225,564	\$318,723 \$116,097 \$287,917	-41%	N/A
146242		380200 - Distr - Services - Plastic	DC APRP 1 - E ST SE - WARD 6 - A001SE	APRP	Risk Based	\$1,829,283	\$277,861	-85%	N/A
169482		380200 - Distr - Services - Plastic	DC APRP 1 - 14TH ST NW - WARD 2 - D002NW4	APRP	Risk Based	\$393,327	\$312,843	-20%	N/A
207441		376200 - Distr - Mains - Plastic	AOP - MONROE BRIDGE REPL BETWN 8TH AND 9TH NE DDOT	Safety and Maintenance	Pressure ties and main abandonment required in support of DDOTs Monroe St Bridge Reconstruction Project No. LOCAL-SR098C	\$745,260	\$795,229	7%	A vac truck was required to locate the water service along the trench area that was not originally estimated. Additionally, the Company was required to perform additional asphalt restoration over what was originally estimated.
219260		380200 - Distr - Services - Plastic	DC APRP 1 - CATHEDRAL AVE NW - WARD 3 - N006NW	APRP	Risk Based	\$962,222	\$179,921	-81%	N/A
222221		376200 - Distr - Mains - Plastic	DC APRP 2 - HAWTHORNE LA NW - WARD 3 - OPT78399	APRP	Risk Based	\$1,735,871	\$309,194	-82%	N/A
255020		376200 - Distr - Mains - Plastic	DC APRP 2 - MOUNT OLIVET RD NE - WARD 5 - OPT60711	APRP	Risk Based	\$670,233	\$498,472	-26%	N/A
280811		376200 - Distr - Mains - Plastic	DC APRP 2 - EASTERN AVE - WARD 4 - OPT 68257	APRP	Risk Based	\$882,817	\$420,031	-52%	N/A
280819		380200 - Distr - Services - Plastic	DC APRP 2 - HARRISON ST NW - WARD 3 - OPT 78650	APRP	Risk Based	\$1,787,914	\$595,400	-67%	N/A
281515		376200 - Distr - Mains - Plastic 380100 - Distr - Services - Steel 380200 - Distr - Services - Plastic	DC APRP 10 - AOP - Florida Ave NE 2nd - H St - FAP STP 2015 (010) - Wards 5 & 6	APRP	Risk Based	\$12,140,361	\$5,512,692 \$745,085 \$2,147,114	-31%	N/A
283776		376200 - Distr - Mains - Plastic	DC AOP - DDOT I295 Safety & Geometric Improvements - Ward 8	Safety and Maintenance	Main relocations required to avoid conflicts with proposed infrastructure under DDOTs I295 Safety and Geometric Improvements Project No. STP-2952(187)	\$496,442	\$803,512	62%	The original cost estimate included only 390' of main replacement, however, the project design was revised in response to conflicts with DDOT work and required 570' of main installation.
284186		376200 - Distr - Mains - Plastic 376100 - Distr - Mains - Steel	DC AOP - Penn. Ave SE & Minn. Ave SE Intersection - Ward 7	Safety and Maintenance	Main relocations required to avoid conflicts with proposed facilities under DDOTs Improvements to the intersection of Pennsylvania Ave & Minnesota Ave SE Project No. STP-2016(011)	\$1,245,871	\$2,101,299 \$1,398,875	181%	This project required additional traffic control and timber shoring to perform 12" main offsets and required a longer offset than originally designed. The Company was also required to use bottom out line stoppers which added additional costs due to depth and material costs. This project also required armed security to ensure the safety of the crews working.
		376100 - Distr - Mains - Steel					\$1,798,017		The Company had to perform the 12" offset with steel instead of plastic as proposed due to the site conditions.

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
285009		376200 - Distr - Mains - Plastic	AOP - Cleveland Park Streetscape - G007NW - Ward 3	Safety and Maintenance	Main relocations required to avoid conflicts with proposed facilities under DDOTs Cleveland Park Streetscape Project No. STP-1114(021)	\$218,557	\$1,289,779	1313%	This job required the use of bottom out line stoppers which increased the depth and required additional shoring, backfill, etc. Furthermore, after the Company's completion of the offset at Porter St NW, DDOT revised their plans and required the Company to change the depth of the newly installed pipe. Finally, this project required the use of additional line stoppers in order to completely stop the flow of gas in order to perform the required work. The design estimated was created using average costs and therefore would not have accounted for these additional requirements. The actual costs incurred on this project are the result of actual site conditions and work requirements.
285137		376200 - Distr - Mains - Plastic 380200 - Distr - Services - Plastic	DC APRP 10 - AOP - Rehabilitation C St NE - Ward 6	APRP	Risk Based	\$5,484,783	\$4,066,338 \$185,005	-22%	N/A
286503		376200 - Distr - Mains - Plastic 376100 - Distr - Mains - Steel 380100 - Distr - Services - Steel 380200 - Distr - Services - Plastic	DC APRP 10 - AOP - Massachusetts Ave NW Rehabilitation - Ward 2	APRP	Risk Based	\$10,866,603	\$7,477,575 \$867,340 \$258,938 \$581,892	-15%	N/A
287031		376200 - Distr - Mains - Plastic 376100 - Distr - Mains - Steel 380100 - Distr - Services - Steel 380200 - Distr - Services - Plastic	DC APRP 10 - AOP - KENNEDY ST NW - Ward 4 - STP-2016(042)	APRP	Risk Based	\$9,035,666	\$4,617,715 \$497,537 \$391,739 \$1,132,595	-27%	N/A
287303		376200 - Distr - Mains - Plastic	DC AOP - Reconstruction of Florida Ave NW - Ward 1	Safety and Maintenance	Main abandonment required to avoid conflict with proposed storm drain inlet under DDOT's Reconstruction of Florida Ave NW Project No. STP1116(029)	\$44,656	\$104,079	133%	This project required additional paving and restoration that was not included in the original estimate.
287923		380100 - Distr - Services - Steel	799 9th St NW - BOQUERIA REST BLDG	New Business and Market Enhancement	Customer requested	\$13,209	\$126,859	860%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
288107		380200 - Distr - Services - Plastic	DC VMC - 4TH ST NE - BOO4NE - WARD 5	Safety and Maintenance	Services Identified for replacement utilizing the Historical Leaks per Quad, services did not qualify for replacement under Project PIPES	\$145,719	\$123,322	-15%	N/A
288830		380200 - Distr - Services - Plastic	1900 N ST NW	New Business and Market Enhancement	Customer requested	\$34,956	\$122,924	252%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
288941		376200 - Distr - Mains - Plastic	AOP - Billable @0% - 965 FLORIDA AVE NW - C005NW - WARD 1	Safety and Maintenance	Main Abandonment required to avoid conflicts with proposed site development and construction	\$72,716	\$155,763	114%	The construction design for this project included 194' of main replacement, however, due to site conditions, the Company retired 264' of main, increasing the actual costs.
289267		376200 - Distr - Mains - Plastic	DC INT - Field Ops - 4121 9th St NW - C008NW - Ward 4	Safety and Maintenance	Main replacement required to replace 4" CI LP main which had experienced a leak due to cracking of the main and was unable to be repaired utilizing leak clamps	\$162,520	\$993,135	511%	The construction design for this project included 170' of main install and retirement, however, due to site conditions, the Company installed 774' of main which increased the cost. Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
290698		382000 - Distr - Meter Install	809, 853 & 867 NEW JERSEY AVE SE - CSX EAST	New Business and Market Enhancement	Customer requested	\$216,443	\$226,860	5%	N/A

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
291301		380200 - Distr - Services - Plastic	NC - AL425 - 7.0 w/c	New Business and Market Enhancement	Customer requested	\$11,242	\$257,027	2186%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
292257		380200 - Distr - Services - Plastic 380100 - Distr - Services - Steel	DC APRP 4 - F.O. - 300 BLK 10th St NE - C001NE1 - Ward 6	APRP	Risk Based - FO Identified	\$1,598,377	\$924,720 \$267,292	-25%	N/A
292405		376200 - Distr - Mains - Plastic	DC INT - Aspen St NW - A013NW - Ward 4 (Related to BCA 287799 & 283129)	Safety and Maintenance	Main Pressure tie required to support two LP to MP replacement projects	\$224,405	\$466,069	108%	This project required a by-pass that was not originally estimated, increasing the costs of construction. Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
292561		376200 - Distr - Mains - Plastic 376100 - Distr - Mains - Steel	DC APRP 2 - F.O. - Mass Ave NW - L008NW - Ward 3	APRP	Risk Based - FO Identified	\$3,634,329	\$3,020,646 \$249,245	-10%	N/A
293819		376200 - Distr - Mains - Plastic 376100 - Distr - Mains - Steel 380200 - Distr - Services - Plastic	DC APRP 10 - AOP - Cleveland Park - Ward 3 - G007NW	APRP	Risk Based	\$3,606,803	\$5,073,606 \$223,680 \$104,465	50%	i) The project design was updated after initial authorization in order to abandon a large section of the existing Low Pressure main by installing a short section of Medium Pressure main. This added 260' of 12" plastic pipe and the abandonment of 1044' of cast iron pipe. ii) On the first section of the project, crews encountered rock, which is not typical in the District of Columbia, and therefore was not anticipated in the design estimate. iii) Discovery of previously unknown conflicts with existing utilities necessitated additional hand excavation work and offsets. This along with the additional scope and extra work required to address the rock increased the amount of pavement breakage, labor, trucking, traffic control, specialized equipment and restoration cost.
293829		380200 - Distr - Services - Plastic	JOSEPHITE TOWNHSES	New Business and Market Enhancement	Customer requested	\$323,267	\$169,346	-48%	N/A
294341		376200 - Distr - Mains - Plastic	DC APRP 10 - AOP - PA Ave NW Streetscape (17th-22nd) - FAP 2017043- Ward 2	APRP	Risk Based	\$4,127,430	\$2,667,048	-35%	N/A
294701		380200 - Distr - Services - Plastic	DC APRP 4 - AOP - 16th St NW Bus lanes - D002NW1 - Ward 2	APRP	Risk Based	\$860,255	\$724,842	-16%	N/A
295010		380200 - Distr - Services - Plastic	DC AOP - Connecticut Ave NW Streetscape - F004NW2 - Ward 2	Safety and Maintenance	Main relocations required to avoid conflicts with proposed infrastructure under DDOTs Connecticut Ave Streetscape Project No. STP-2016(014)	\$1,089,045	\$127,609	-88%	N/A
295350		376200 - Distr - Mains - Plastic	DC F.O. - APRP 2 - 49th ST NW - M009NW - WARD 3 - OPT 77626	APRP	Risk Based - FO Identified	\$766,546	\$434,328	-43%	N/A
295352		376200 - Distr - Mains - Plastic 380100 - Distr - Services - Steel 380200 - Distr - Services - Plastic	DC F.O. - APRP 4 - W PL NW - I005NW - WARD 3 - OPT 53273	APRP	Risk Based - FO Identified	\$2,195,740	\$1,263,835 \$105,563 \$609,943	-10%	N/A
295414		376200 - Distr - Mains - Plastic 380200 - Distr - Services - Plastic	DC APRP 4 - F.O. - MORRIS RD SE - D005SE - WARD 8 - OPT 47141	APRP	Risk Based - FO Identified	\$1,099,261	\$545,151 \$113,307	-40%	N/A
295824		376200 - Distr - Mains - Plastic	DC F.O. - APRP 4 - Massachusetts Ave NW - Ward 3 - I006NW	APRP	Risk Based - FO Identified	\$991,696	\$227,145	-77%	N/A
295844		376200 - Distr - Mains - Plastic	DC AOP - 16th St NW Bus Lanes - D006NW - Ward 1	Safety and Maintenance	Main relocation required to avoid conflicts with proposed infrastructure under DDOTs 16th St NW Bus Lanes Project No. STP-2016(032)	\$255,228	\$283,568	11%	The TCPs for this project were required to be revised and required additional traffic control, including arrow boards and additional crews.
295916		376200 - Distr - Mains - Plastic	DC BILLABLE @100% - STATE DEPT - D ST NW - F001NW	Safety and Maintenance	Main relocation requested by US State Dept required to avoid conflicts with site development and construction proposed by US State Department.	\$414,627	\$353,666	-15%	N/A

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
295999		376100 - Distr - Mains - Steel	DC APRP 10 - 215 G ST NE - MCN BUILD - A002NE - WARD 6	APRP	Risk Based	\$63,224	\$251,517	298%	Extensive excavations were required to complete the main abandonment. These excavations required the use of a vac truck, and increased the labor costs, traffic control, dump fees, backfill, trucking, pavement breakage and shoring costs.
296728		376200 - Distr - Mains - Plastic	AOP - BILLABLE @100% - K ST NW - H002NW - WARD 2 - DC Water Structure 44	Safety and Maintenance	Main relocation requested by DC Water required to avoid conflict with proposed infrastructure under DC Waters Clean Rivers Project	\$210,200	\$168,065	-20%	N/A
296948		376200 - Distr - Mains - Plastic	DC APRP 10 - AOP - ASPEN ST NW - C013NW - Ward 4	APRP	Risk Based	\$189,181	\$108,709	-43%	N/A
297069		380200 - Distr - Services - Plastic	STANTON SQ TWNHSES - JAMES BANKS RD/STANTON RD SE	New Business and Market Enhancement	Customer requested	\$100,464	\$144,570	44%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
297357		376200 - Distr - Mains - Plastic	DC APRP 10 - AOP - S St NW Revitalization 4th to 7th - B004NNW1 - Ward 1	APRP	Risk Based	\$1,669,457	\$888,274	-22%	N/A
		376100 - Distr - Mains - Steel					\$300,395		
		380200 - Distr - Services - Plastic					\$119,116		
298171		376200 - Distr - Mains - Plastic	AOP - BILLALBE @ 100% - 60 I ST SW - DAVIS UTILITY - A002SW4 - WARD 6	Safety and Maintenance	Main relocation requested by customer required to avoid conflicts with proposed site development and construction	\$574,357	\$217,569	-35%	N/A
		376100 - Distr - Mains - Steel					\$155,862		
298472		380200 - Distr - Services - Plastic	DC APRP 10 - PLUG - Feeder 15009 - Ward 4	APRP	Risk Based	\$13,207,513	\$771,403	-93%	N/A
		380100 - Distr - Services - Steel					\$211,995		
298518		376200 - Distr - Mains - Plastic	DC APRP 10 - AOP - Connecticut Ave NW Streetscape - F004NW2 - ward 2	APRP	Risk Based	\$1,713,647	\$1,555,466	-9%	N/A
299196		376200 - Distr - Mains - Plastic	DC AOP - BILLABLE @ 100% - CLARION GABLES - 1325 5TH ST NE - B003NE2 - WARD 5	Safety and Maintenance	Main relocation requested by customer required to avoid conflict with proposed site development and construction	\$372,029	\$145,391	-61%	N/A
299376		376200 - Distr - Mains - Plastic	DC APRP 2 - Sedgwick ST NW - M008NW - Ward 3 - OPT 77625	APRP	Risk Based	\$1,242,786	\$589,468	-42%	N/A
		380200 - Distr - Services - Plastic					\$136,695		
299378		376200 - Distr - Mains - Plastic	DC APRP 4 - Walter ST SE - C001SE2 - Ward 6 - OPT 214983	APRP	Risk Based	\$2,244,289	\$469,789	-59%	N/A
		380200 - Distr - Services - Plastic					\$457,942		
299388		376200 - Distr - Mains - Plastic	DC APRP 2 - 34th St NW-I006NW - Ward 3 - OPT111567	APRP	Risk Based	\$608,978	\$504,172	-17%	N/A
299392		376200 - Distr - Mains - Plastic	DC APRP 4 - Lamont St NW-C006NW1 - Ward 1 - OPT 55301	APRP	Risk Based	\$1,058,889	\$570,457	-19%	N/A
		376100 - Distr - Mains - Steel					\$146,432		
		380200 - Distr - Services - Plastic					\$141,731		
299394		376200 - Distr - Mains - Plastic	DC APRP 2 - Ver Planck PL NW - K008NW - Ward 3 - OPT 70022	APRP	Risk Based	\$3,902,210	\$2,253,442	-32%	N/A
		380100 - Distr - Services - Steel					\$100,124		
		380200 - Distr - Services - Plastic					\$314,853		
299398		376200 - Distr - Mains - Plastic	DC APRP 2 - HOLBROOK ST NE - WARD 5 - E003NE1 - OPT 60775	APRP	Risk Based	\$793,891	\$137,740	-83%	N/A
299400		376200 - Distr - Mains - Plastic	DC APRP 2 - MACARTHUR BLVD NW - WARD 3 - N006NW - OPT 66856	APRP	Risk Based	\$1,149,123	\$1,118,723	-3%	N/A
299495		376100 - Distr - Mains - Steel	DC AOP - BILLABLE @100% - WMATA SQ 487 - 600 5TH ST NW - B002NW4 - WARD 4	Safety and Maintenance	Main relocation requested by customer required to avoid conflict with proposed site development and construction	\$683,419	\$585,518	-14%	N/A
299512		380200 - Distr - Services - Plastic	DC APRP 10 - MLK Jr. Ave SE Phase II - Ward 8	APRP	Risk Based	\$9,048,603	\$786,206	-91%	N/A
299764		376200 - Distr - Mains - Plastic	DC F.O. - APRP 4 - 4th St NE - B004NE - Ward 5	APRP	Risk Based - FO Identified	\$1,309,797	\$345,215	-74%	N/A
		380100 - Distr - Services - Steel					\$159,820		
		380200 - Distr - Services - Plastic					\$441,769		
		376200 - Distr - Mains - Plastic					\$1,064,078		Utility conflicts associated with the installation of 6" plastic main required the entire length of about 163' of trench to be excavated by hand digging and with vac

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
300025		380100 - Distr - Services - Steel	DC F.O. - APRP 4 - 40TH ST - Ward 7 - OPT 362857	APRP	Risk Based - FO Identified	\$1,068,398	\$106,325	41%	truck. Utility conflicts also required an additional 38' of 6" and 2" main pipe to be installed. DDOT time restrictions and lane and sidewalk crossing restrictions delayed the work leading to additional labor, trucking and traffic control costs. These things were not known at the time of the estimate.
		380200 - Distr - Services - Plastic					\$341,105		
300052		380200 - Distr - Services - Plastic	FT MCNAIR RESIDENTIAL - 2ND AVE SW	New Business and Market Enhancement	Customer requested	\$1,967,932	\$654,981	-60%	N/A
		380100 - Distr - Services - Steel					\$122,532		
300153		380200 - Distr - Services - Plastic	DC APRP 1 - Wesley Pl SW - B002SW - Ward 6	APRP	Risk Based	\$450,340	\$117,796	-74%	N/A
300159		380200 - Distr - Services - Plastic	DC APRP 3 - Division Ave NE - L001NE - Ward 7	APRP	Risk Based	\$565,941	\$195,810	-65%	N/A
300162		380200 - Distr - Services - Plastic	DC APRP 3 - Kennedy St NE - B010NE - Ward 5	APRP	Risk Based	\$716,165	\$275,563	-46%	N/A
		380100 - Distr - Services - Steel					\$108,156		
300164		380200 - Distr - Services - Plastic	DC APRP 3 - 6TH St SE - B010SE - Ward 8	APRP	Risk Based	\$482,555	\$192,366	-60%	N/A
300176		380200 - Distr - Services - Plastic	DC APRP 3 - Eastern Ave - A012NE - Ward 4	APRP	Risk Based	\$472,565	\$120,268	-75%	N/A
300699		376200 - Distr - Mains - Plastic	DC AOP - S St NW 4th to 7th - Wards 1 & 2 - B004NW2	Safety and Maintenance	Main relocations required to avoid conflicts with proposed facilities under DDOTs S St NW Revitalization Project No. STP-2018(046)	\$601,308	\$429,450	28%	The construction design for this project included 400' of main installation, however, due to site conditions, this was extended to 513' of install which increased the actual costs.
		380200 - Distr - Services - Plastic					\$342,292		
300773		380200 - Distr - Services - Plastic	DC APRP 1 - L St NE - A003NE - Ward 6	APRP	Risk Based	\$608,135	\$180,508 \$103,693	-53%	N/A
300909		376200 - Distr - Mains - Plastic	DC BILLABLE @100% - 500 Indiana Ave NW - B001NW - WARD 2 - AECOM	Safety and Maintenance	Main relocation requested by customer required to avoid conflict with proposed site development and construction	\$244,622	\$153,346	-37%	N/A
300960		376200 - Distr - Mains - Plastic	DC F.O. - APRP 2 - Rhode Island Ave NE - B005NE3 - Ward 5	APRP	Risk Based - FO Identified	\$894,225	\$599,709	-17%	N/A
		380200 - Distr - Services - Plastic					\$143,327		
300969		376200 - Distr - Mains - Plastic	DC APRP 4 - Emerald St NE - D002NE3 - Ward 6 - OPT 363402	APRP	Risk Based	\$2,800,223	\$985,355	-30%	N/A
		380100 - Distr - Services - Steel					\$123,060		
		380200 - Distr - Services - Plastic					\$861,876		
300976		376200 - Distr - Mains - Plastic	DC APRP 3 - Sedgwick St NW - L008NW - Ward 3 - OPT 110415	APRP	Risk Based	\$4,663,277	\$1,873,344	-60%	N/A
		380100 - Distr - Services - Steel					\$170,987		
		380200 - Distr - Services - Plastic					\$736,091		
300979		376200 - Distr - Mains - Plastic	DC EMMR - CANAL RD NW - I003NW3 - WARD 2	Safety and Maintenance	Main replacement required to replace leaking segment of 12" WRPD 20# main with multiple leaks. Operations was unable to repair or encapsulate the leaks due to piping configuration.	\$950,915	\$685,204	19%	The construction design for this project included 65' of main replacement, however, due to site conditions, the Company retired 120' of main, increasing the actual costs.
		376100 - Distr - Mains - Steel					\$448,943		
301132		380200 - Distr - Services - Plastic	DC APRP 1 - INGRAHAM ST NE - B010NE - Ward 5	APRP	Risk Based	\$543,615	\$128,429	-76%	N/A
301134		380200 - Distr - Services - Plastic	DC APRP 1 - MICHIGAN AVE NE - B007NE - Ward 5	APRP	Risk Based	\$774,046	\$146,067	-63%	N/A
		380100 - Distr - Services - Steel					\$139,168		
301141		380200 - Distr - Services - Plastic	DC APRP 1 - KEEFER PL NW - B006NW1 - Ward 1	APRP	Risk Based	\$721,116	\$118,110	-84%	N/A
301143		380200 - Distr - Services - Plastic	DC APRP 1 - RHODE ISLAND AVE NW - C003NW1 - Ward 2	APRP	Risk Based	\$810,400	\$122,966	-85%	N/A
301144		380200 - Distr - Services - Plastic	DC APRP 1 - G ST SE - C002SE1 - Ward 6	APRP	Risk Based	\$643,691	\$171,749	-73%	N/A
301146		380200 - Distr - Services - Plastic	DC APRP 1 - GALLATIN ST NW - A010NW3 - Ward 4	APRP	Risk Based	\$869,836	\$131,937	-85%	N/A
301151		380200 - Distr - Services - Plastic	DC APRP 1 - RHODE ISLAND AVE NW - D003NW2 - Ward	APRP	Risk Based	\$563,475	\$162,947	-71%	N/A
301162		380200 - Distr - Services - Plastic	DC APRP 1 - 8TH ST SE - B001SE4 - Ward 6	APRP	Risk Based	\$464,004	\$113,545	-76%	N/A
301164		380200 - Distr - Services - Plastic	DC APRP 1 - HAMILTON ST NW - A010NW3 - Ward 4	APRP	Risk Based	\$501,174	\$164,058	-46%	N/A
		380100 - Distr - Services - Steel					\$107,580		
301165		380200 - Distr - Services - Plastic	DC APRP 1 - 8TH ST SE - C001SE1 - Ward 6	APRP	Risk Based	\$405,204	\$122,986	-70%	N/A
301190		380200 - Distr - Services - Plastic	DC APRP 3 - A ST SE - L001SE - Ward 7	APRP	Risk Based	\$433,725	\$100,220	-77%	N/A
301193		380200 - Distr - Services - Plastic	DC APRP 3 - 3RD ST SE - A001SE - Ward 6	APRP	Risk Based	\$245,553	\$104,645	-57%	N/A
301204		380200 - Distr - Services - Plastic	DC APRP 5 - 8TH ST NW - C012NW4 - Ward 4	APRP	Risk Based	\$630,132	\$225,201	-64%	N/A
301208		380200 - Distr - Services - Plastic	DC APRP 5 - 4TH ST NE - B003NE2 - Ward 5	APRP	Risk Based	\$436,097	\$167,506	-62%	N/A
301215		380200 - Distr - Services - Plastic	DC APRP 3 - G ST SW - A002SW1 - Ward 6	APRP	Risk Based	\$398,350	\$151,329	-62%	N/A

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
301579		376200 - Distr - Mains - Plastic	DC F.O. - APRP 4 - CUMBERLAND ST NW - J009NW - WARD 3	APRP	Risk Based	\$1,185,005	\$735,172	-38%	N/A
301618		376200 - Distr - Mains - Plastic	DC F.O.- APRP 4 - 16TH ST NW - D006NW - WARD 1	APRP	Risk Based - FO Identified	\$429,185	\$334,610	-22%	N/A
302040		380200 - Distr - Services - Plastic	DC - OPT 188687 - JEFFERSON ST NE - B010NE - WARD 5	Safety and Maintenance	Main identified for replacement through Optimain Risk Prioritization, Main is not eligible for replacement under ARP	\$947,695	\$120,146	-87%	N/A
302389		380200 - Distr - Services - Plastic	DC APRP 10 - Metro Branch Trail from Fort Totten to Takoma - A011NE - Ward 4	APRP	Risk Based	\$1,883,410	\$205,311	-89%	N/A
303117		376200 - Distr - Mains - Plastic	DC APRP 4 - Randolph St NW - B008NW3 - Ward 4 - OPT 58916	APRP	Risk Based	\$2,173,037	\$340,355	-51%	N/A
		376100 - Distr - Mains - Steel					\$100,290		
		380100 - Distr - Services - Steel					\$156,072		
		380200 - Distr - Services - Plastic					\$469,834		
303119		376100 - Distr - Mains - Steel	DC APRP 2 - Montana Ave NE - D006NE - Ward 5 - OPT 60623	APRP	Risk Based	\$1,233,608	\$730,235	-24%	N/A
		376200 - Distr - Mains - Plastic					\$211,392		
303121		376200 - Distr - Mains - Plastic	DC APRP 4 - Longfellow St NW - B010NW1 - Ward 4 - OPT 57343	APRP	Risk Based	\$1,630,762	\$315,366	-67%	N/A
		380200 - Distr - Services - Plastic					\$214,669		
303140		380200 - Distr - Services - Plastic	DC APRP 2 - OPT 3874144 - Q St SE - E003SE - Ward 8	APRP	Risk Based	\$2,319,259	\$268,007	-88%	N/A
303250		376200 - Distr - Mains - Plastic	DC APRP 4 - SHEPHERD ST NW - B008NW4 - Ward 4 - OPT 58913	APRP	Risk Based	\$1,271,932	\$229,822	-69%	N/A
		380200 - Distr - Services - Plastic					\$163,629		
303646		376200 - Distr - Mains - Plastic	DC F.O. - DC APRP 2 - Luzon Ave NW - D012NW - Ward 4	APRP	Risk Based - FO Identified	\$2,847,854	\$2,036,282	-15%	N/A
		380200 - Distr - Services - Plastic					\$377,264		
303992		380200 - Distr - Services - Plastic	APRP 1 - 16TH ST NW - D015NW - Ward 4	APRP	Risk Based	\$673,151	\$220,929	-67%	N/A
303994		380200 - Distr - Services - Plastic	APRP 1 - HADFIELD LN NW - K004NW - Ward 3	APRP	Risk Based	\$995,898	\$181,137	-82%	N/A
303999		380200 - Distr - Services - Plastic	APRP 1 - MILITARY RD NW - I011NW - Ward 3	APRP	Risk Based	\$584,612	\$124,202	-79%	N/A
304003		380200 - Distr - Services - Plastic	APRP 1 - GROFF CT NE - B002NE3 - Ward 6	APRP	Risk Based	\$473,842	\$119,177	-75%	N/A
304004		380200 - Distr - Services - Plastic	APRP 1 - MASSACHUSETTS AVE NW - L008NW - Ward 3	APRP	Risk Based	\$540,330	\$106,524	-80%	N/A
304025		380200 - Distr - Services - Plastic	APRP 1 - L ST NE - C003NE - Ward 6	APRP	Risk Based	\$493,388	\$103,396	-79%	N/A
304028		380200 - Distr - Services - Plastic	APRP 1 - 13TH ST NE - D006NE - Ward 5	APRP	Risk Based	\$500,330	\$127,230	-75%	N/A
304037		380200 - Distr - Services - Plastic	APRP 1 - GARFIELD ST NW - G006NW - Ward 3	APRP	Risk Based	\$451,237	\$102,771	-77%	N/A
304040		380200 - Distr - Services - Plastic	APRP 1 - GEORGIA AVE NW - C014NW - Ward 4	APRP	Risk Based	\$856,116	\$109,840	-87%	N/A
304046		380200 - Distr - Services - Plastic	APRP 1 - PENNSYLVANIA AVE SE - F003SE - Ward 8	APRP	Risk Based	\$630,291	\$114,496	-82%	N/A
304053		380200 - Distr - Services - Plastic	APRP 1 - FAIRMONT ST NW - C006NW4 - Ward 1	APRP	Risk Based	\$994,918	\$297,292	-57%	N/A
		380100 - Distr - Services - Steel					\$134,757		
304059		380200 - Distr - Services - Plastic	APRP 1 - W ST NW - C005NW - Ward 1	APRP	Risk Based	\$591,827	\$287,626	-30%	N/A
		380100 - Distr - Services - Steel					\$125,522		
304060		380200 - Distr - Services - Plastic	APRP 1 - 47TH ST NW - B009NW4 - Ward 4	APRP	Risk Based	\$502,298	\$107,513	-79%	N/A
304062		380200 - Distr - Services - Plastic	APRP 1 - RESERVOIR RD NW - J004NW - Ward 2	APRP	Risk Based	\$886,174	\$250,543	-49%	N/A
		380100 - Distr - Services - Steel					\$199,711		
304063		380200 - Distr - Services - Plastic	APRP 1 - 37TH ST NW - J004NW - Ward 2	APRP	Risk Based	\$824,681	\$263,486	-44%	N/A
		380100 - Distr - Services - Steel					\$195,875		
304073		380200 - Distr - Services - Plastic	APRP 1 - RENO RD NW - I009NW - Ward 3	APRP	Risk Based	\$466,350	\$119,252	-74%	N/A
304117		380200 - Distr - Services - Plastic	APRP 3 - TAYLOR ST NW - C008NW - Ward 4	APRP	Risk Based	\$616,328	\$129,810	-79%	N/A
304143		380200 - Distr - Services - Plastic	DC APRP 5 - 11TH ST NE - C009NE2 - Ward 5	APRP	Risk Based	\$425,122	\$103,929	-76%	N/A
304144		380200 - Distr - Services - Plastic	DC APRP 5 - DELAFIELD PL NE - C009NE2 - Ward 5	APRP	Risk Based	\$469,365	\$176,789	-62%	N/A
304145		380200 - Distr - Services - Plastic	DC APRP 5 - SAVANNAH PL SE - E006SE - Ward 8	APRP	Risk Based	\$641,655	\$265,931	-59%	N/A
304147		380200 - Distr - Services - Plastic	DC APRP 5 - 20TH ST SE - E006SE - Ward 8	APRP	Risk Based	\$425,643	\$122,019	-71%	N/A
304149		380200 - Distr - Services - Plastic	DC APRP 5 - LEE ST NE - K003NE - Ward 7	APRP	Risk Based	\$686,650	\$179,774	-74%	N/A
304151		380200 - Distr - Services - Plastic	DC APRP 5 - 49TH ST NE - K003NE - Ward 7	APRP	Risk Based	\$851,834	\$236,177	-72%	N/A
304152		380200 - Distr - Services - Plastic	DC APRP 5 - MEADE ST NE - K003NE - Ward 7	APRP	Risk Based	\$544,149	\$223,548	-59%	N/A
304931		376200 - Distr - Mains - Plastic	DC AOP - BILLALBE @ 100% - 25 M ST SE - WILES MENSCH	Safety and Maintenance	Main relocation requested by customer required to avoid conflict with proposed site development and construction	\$214,283	\$112,117	-48%	N/A
305429		380200 - Distr - Services - Plastic	DC APRP 1 - DAVIS PL NW - K005NW - Wards 3 & 4	APRP	Risk Based	\$1,048,260	\$170,202	-84%	N/A

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
306347		376100 - Distr - Mains - Steel	DC AOP - BILL @ 0% - BRENTWOOD RD NE - C005NE - W5	Safety and Maintenance	Main Abandonment required to avoid conflicts with proposed site development and construction	\$85,429	\$228,569	168%	The construction design for this project included 220' of main replacement, however, due to site conditions, the Company retired 456' of main, increasing the actual costs.
306680		376100 - Distr - Mains - Steel	DC F.O. - APRP 4 - 17th St NE - E002NE1	APRP	Risk Based	\$890,210	\$350,405	-61%	N/A
159120		376200 - Distr - Mains - Plastic	3557 Georgia Ave NW (The V Building - Old Name)	New Business and Market Enhancement	Customer Requested	\$30,425	\$153,325	404%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
278740		376200 - Distr - Mains - Plastic	50 Florida Ave NE	New Business and Market Enhancement	Customer Requested	\$29,109	\$133,881	360%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
278741		376200 - Distr - Mains - Plastic	Hill East - Bldg F1	New Business and Market Enhancement	Customer Requested	\$29,244	\$159,779	446%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
279844		376200 - Distr - Mains - Plastic	The Yards Parcel O 1300 4th ST SE	New Business and Market Enhancement	Customer Requested	\$3,921	\$119,045	2936%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
285338		376200 - Distr - Mains - Plastic	1815 COLUMBIA RD NW - RESTAURANT	New Business and Market Enhancement	Customer Requested	\$16,487	\$197,538	1098%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
286157		376200 - Distr - Mains - Plastic	1270 4th St NE	New Business and Market Enhancement	Customer Requested	\$10,910	\$230,597	2014%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
287720		376200 - Distr - Mains - Plastic	6850 GA AVE NW- PARKS @ WALTER REED (BLDGS A/B/C & GEN)	New Business and Market Enhancement	Customer Requested	\$19,668	\$210,289	969%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
289843		376200 - Distr - Mains - Plastic	1501 14TH ST NW - STUDIO THEATRE	New Business and Market Enhancement	Customer Requested	\$66,500	\$227,433	242%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
291648		376200 - Distr - Mains - Plastic	619 14TH ST NW	New Business and Market Enhancement	Customer Requested	\$17,776	\$246,496	1287%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
292650		376200 - Distr - Mains - Plastic	300 & 325 MORSE ST NE - BLDG A & B	New Business and Market Enhancement	Customer Requested	\$177,950	\$584,457	228%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
293344		376200 - Distr - Mains - Plastic	5816 GEORGIA AVE NW	New Business and Market Enhancement	Customer Requested	\$55,368	\$110,599	100%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
293911		376200 - Distr - Mains - Plastic	The Lexington - 1114 F ST NE	New Business and Market Enhancement	Customer Requested	\$92,268	\$115,939	26%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
295061		376200 - Distr - Mains - Plastic	2131 9TH ST NW	New Business and Market Enhancement	Customer Requested	\$14,222	\$146,546	930%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
295466		376200 - Distr - Mains - Plastic	950 13TH ST NW- FRANKLIN PARK RENOV	New Business and Market Enhancement	Customer Requested	\$33,007	\$248,425	653%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
295599		376200 - Distr - Mains - Plastic	PKS @ WALTER REED - BLDG IJ-O-P	New Business and Market Enhancement	Customer Requested	\$84,229	\$746,530	786%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
295890		376200 - Distr - Mains - Plastic	1000 S CAPITOL ST SE	New Business and Market Enhancement	Customer Requested	\$24,265	\$446,916	1742%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
298471		376200 - Distr - Mains - Plastic	17 MISSISSIPPI AVE SE	New Business and Market Enhancement	Customer Requested	\$123,652	\$634,517	413%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
298544		376200 - Distr - Mains - Plastic	1 FLORIDA AVE NE - MAIN/DMBI	New Business and Market Enhancement	Customer Requested	\$90,264	\$179,026	98%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
298786		376200 - Distr - Mains - Plastic	CITY RIDGE - 3900 WISCONSIN AVE NW - DMBI	New Business and Market Enhancement	Customer Requested	\$603,462	\$989,765	64%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
299883		376200 - Distr - Mains - Plastic	575 3RD ST NW #GEN - LILLIAN & ALBERT SMALL JEWISH MUSEUM	New Business and Market Enhancement	Customer Requested	\$98,623	\$243,009	146%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
300052		376200 - Distr - Mains - Plastic	FT MCNAIR RESIDENTIAL - 2ND AVE SW	New Business and Market Enhancement	Customer Requested	\$1,407,583	\$464,787	-67%	N/A
300053		376200 - Distr - Mains - Plastic	FT MCNAIR OFC BLDGS -2ND AVE SW	New Business and Market Enhancement	Customer Requested	\$1,042,128	\$812,430	-22%	N/A
300170		376200 - Distr - Mains - Plastic	1224 M ST NW - DMBI	New Business and Market Enhancement	Customer Requested	\$46,089	\$102,399	122%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
300808		376200 - Distr - Mains - Plastic	PKS @ WALTER REED - BLDGS 6 & 7	New Business and Market Enhancement	Customer Requested	\$220,613	\$309,668	40%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
301035		376200 - Distr - Mains - Plastic	ARLO HOTEL- 333 G ST NW - DMBI	New Business and Market Enhancement	Customer Requested	\$233,317	\$258,233	11%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
301219		376200 - Distr - Mains - Plastic	FREDERICK DOUGLAS HSE - 1411 W ST SE	New Business and Market Enhancement	Customer Requested	\$643,786	\$491,153	-24%	N/A
301361		376200 - Distr - Mains - Plastic	CONWAY SCH OF NURSING - 615 ALUMNI LA NE	New Business and Market Enhancement	Customer Requested	\$279,454	\$111,315	-60%	N/A
301706		376200 - Distr - Mains - Plastic	734 15TH ST NW - MAIN PRESSURE TIE & DMBI	New Business and Market Enhancement	Customer Requested	\$47,231	\$210,167	345%	Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
	3256581	380200 - Distr - Services - Plastic	ABAND GAS SERV AT MAIN === 705 4TH	Safety and Maintenance	Customer requested service abandonment request	\$10,392	\$109,274	952%	Additional paving and restoration was required by DDOT increasing the actual costs. Estimated cost was based on historical averages. The actual costs incurred on this project are the result of actual site conditions and work requirements.
	3914877	380200 - Distr - Services - Plastic	REPLACE STEEL SERVICE PER RAYMOND F	Safety and Maintenance	Customer requested service replacement associated with a meter move	\$114,394	\$114,829	0%	N/A
	W1000237	378002 - Distr - Meas & Reg Sta	Regulator Replacement (019). 42nd S	Safety and Maintenance	Work to upgrade aging regulators in the District with newer style Mooney regulators, increasing system safety and reliability	\$200,000	\$197,849	-1%	N/A
	W1000246	376200 - Distr - Mains - Plastic	Distribution Repl,Mains Repl, Other	Safety and Maintenance	Inspection of exposed main on structures (bridges) in 2020.	\$210,000	\$322,202	53%	This is a blanket safety and maintenance work order in which the Company performs inspections of mains on structures. This estimate did not include the Key Bridge inspection and repairs which was performed under this work order.
	W1000256	369002 - Trans-Meas Reg Sta Spur	Strip 9 - Spur Valve 12	Safety and Maintenance	Replacement of Leaking Valve	\$1,050,000	\$1,036,132	-1%	N/A
	W1000257	376100 - Distr - Mains - Steel	Distribution Repl-Main-Other	Safety and Maintenance	Inspection of exposed main on structures (bridges) in 2021.	\$200,000	\$152,381	-24%	N/A
	W1000259	369002 - Trans-Meas Reg Sta Spur	Modem to Radio Conversions	IT	Convert unsupported Verizon landlines to data radios over the land mobile radio (LMR) system	\$100,000	\$166,294	66%	The variance was caused by the Company upgrading the power source of the data radios from electric to solar at the same time as the Company performed the other scheduled upgrades.

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
	W2132200, W2232200, W2232200E, W2332200, W2332200E	376200 - Distr - Mains - Plastic	Blanket Riders for Cutouts	Safety and Maintenance	Main cutouts in response to a leak or other identified condition	\$19,347,001	\$7,259,070	-62%	N/A
	W2135000, W2235000, W2435000	381200 - Distr - Meters - HardCase	Blanket - Meters	Safety and Maintenance	Used to place order meters for service work.	\$7,870,000	\$2,149,599	-73%	N/A
	W2234000, W2234000E	380200 - Distr - Services - Plastic	Blanket - Service Replacements	Safety and Maintenance	Replacement of services and or risers in response to a leak or other identified issue/conflict	\$3,370,000	\$1,092,200	-68%	N/A
	W2364500, W2464500	397203 - General - Comm Equip Ensca	Blanket - AMR Devices	Safety and Maintenance	Used to order AMR remote technology for meter work.	\$3,435,000	\$694,079	-80%	N/A
	W22350N1	381300 - Distr - Meters -Index Corr	Blanket - Correcting Instruments	Safety and Maintenance	New equipment which was required for electronic pressure recorder upgrades.	\$380,000	\$104,383	-73%	N/A
	W2334000E	380200 - Distr - Services - Plastic	Blanket - Service/Riser Replacements	Safety and Maintenance	Replacement of services and or risers in response to a leak or other identified issue/conflict	\$388,500	\$120,476	-69%	N/A
	C1002318, C1005319A, C1005319A	367100 - Trans - Mains - Loop	Strip 38 – Landover	Safety and Maintenance	System reliability and reinforcement-Needed to assure system minimum pressures per system planning. Pipeline to connect WGL's Strip 24 line in Brandywine, Maryland to WGL's Strip 17 line in Landover; this work order is associated to 29,959' of 24-inch pipe placed into service.	\$76,215,014	\$103,282,596	36%	a)Cost of work, including quantities on non-pipe items not included in initial estimate (e.g. restoration, traffic control, trench protection/sheet piling, timber matting,) b)Change in construction approach/method (e.g. direct bury v bore due to environmental restrictions or site conditions) c)Delays due to right-of-way acquisition issues
	C1002675C, C1002675F	367100 - Trans - Mains - Loop	Strip 1 West	Safety and Maintenance	Replace approx. 6.5 miles of the existing 16-inch transmission main with 24-inch high pressure steel pipeline - Phase 3 Mainline - 14420 FT. Under the TIMP program and the applicable risk model, Strip 1 is the highest risk strip in the transmission system. Originally constructed in 1948 of ERW piping, Strip 1 replacement mitigates risk and achieves compliance with current requirements Project also done in conjunction with VDOT Roadway project - compelled to do work by VDOT	\$70,752,000	\$67,270,227	-5%	N/A
	C1002718	367100 - Trans - Mains - Loop	Strip 6 - Downstream of Rosslyn	Safety and Maintenance	Maintenance and Regulatory Compliance (VA SAVE). Replacement of approximately 3000 ft of "lap welded" 16" pipe, to address mitigate industry known risks.	\$7,450,000	\$7,286,306	-2%	N/A
	C1005206	397100 - General - Comm Equipment	Microwave Network Upgrade	IT	Upgrade end of life communications hardware that securely carries all data traffic for company SCADA, mobile radio, corporate data (email, work management, corporate files, etc.).	\$5,450,000	\$5,446,966	0%	N/A
	C1005196	397100 - General - Comm Equipment	LMR System Upgrade	IT	Upgrade end of life hardware for secure communications for remote monitoring and dispatching of personnel via mobile radio.	\$4,500,000	\$4,303,021	-4%	N/A
	C1005448	369003 - Trans-Meas Reg Sta Loop	RCV - Strip 02 - Valve 18 (VA)	Safety and Maintenance	Install a Pressure Reducing Station (PRS) to protect lower MAOP pipe. Install a Remote Control Valve (RCV) to allow quick shut off capability to project High Consequence Areas (HCA).	\$3,556,000	\$3,384,095	-5%	N/A

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
	C1005418	303000 - Intangible - Computer SW	Investment Planning	IT	<p>An investment planning and portfolio optimization tool based on an enterprise value framework and processes that establish clear linkages between investment portfolios and risk reduction. Using a common value framework, provide the ability to compare investments across gas asset classes and across diverse asset types and business functions.</p> <p>Outcomes</p> <ul style="list-style-type: none"> - Develop a common value framework to standardize business cases development and estimation of project benefits - Compare different programs or projects with dissimilar benefits using the common value framework - Quantify trade-offs between different portfolio scenarios based on constraints and target outcomes including budget, risk targets, regulatory constraints, and benefits - Well supported investment decisions with clear linkage to asset risk modeling as the basis for individual project selection and capital budgeting - Improved agility to quickly understand the impacts of changes to budget or impacts of plan changes and emergent work - Shift to multi-year project level optimization v. current year 'cut-line' prioritization - Integrate with other systems to track forecasts, actuals, and progress to create a single version of the multi-year plan 	\$2,024,223	\$2,698,791	33%	Schedule extension/cost impacts to address technical complexities with implementation. Additional Request to include Business Process Mapping
	C1005417	303000 - Intangible - Computer SW	Asset Risk Management	IT	<p>Incrementally deploy asset risk models that calculate probabilistic Likelihood of Failure (LOF) and Consequence of Failure (COF) across all asset classes (Distribution, Transmission, Storage and Facility) into quantitative, monetized total risk scores. This will enable data-driven, risk-prioritized asset integrity management decision making, which will drive investment planning.</p> <p>Outcomes</p> <ul style="list-style-type: none"> - Standardize risk assessment with a probabilistic risk model across various gas assets (storage, station, transmission, and distribution facilities) - Increase predictive capabilities of risk model by adopting a probabilistic risk platform - Analyze asset risk and create risk models by combining Likelihood and Consequence of Failure into quantitative, monetized total risk scores - Output risk modeling results for direct use via integration with geospatial systems and Investment Planning 	\$3,286,813	\$2,584,554	-21%	N/A
	C1005212	397100 - General - Comm Equipment	Mobile Radio	IT	Replacement mobile radios as part of the LMR System Upgrade.	\$510,000	\$2,335,169	358%	Decision made to purchase all mobile radios under one work order after the initial estimate was created. Additional incremental mobile radios were purchased to support additional operations vehicles.

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
	C1005260	369003 - Trans-Meas Reg Sta Loop	Strip 14 RCV Valve 5	Safety and Maintenance	Install a Remote Control Valve (RCV) to allow quick shut off capability to project High Consequence Areas (HCA).	\$2,601,000	\$2,478,730	-5%	N/A
	C1005588	369003 - Trans-Meas Reg Sta Loop	Strip 15 Valve 23 Replacement	Safety and Maintenance	ARP - Plug Valve Replacement with Ball Valve to allow for In-Line Inspection	\$1,579,000	\$2,477,045	57%	Additional costs were incurred by Washington Gas to pay the contractor due to the Italian Embassy requesting Washington Gas delay the start of construction after the contractor had mobilized to begin work. Traffic control was more extensive than estimated including revising the original traffic control plan to reduce the number of lanes on Massachusetts Ave blocked and shifting 24 hour staging of material to a side road on the other side of Massachusetts Ave from the project site.
	C1005264	369003 - Trans-Meas Reg Sta Loop	Strip 14 RCV Valve 2	Safety and Maintenance	Install a Remote Control Valve (RCV) to allow quick shut off capability to project High Consequence Areas (HCA).	\$2,341,000	\$2,355,917	1%	N/A
	C1002729	397100 - General - Comm Equipment	SCADA - New SCADA System Software.	IT	Replaced end of life SCADA application with new application	\$1,973,926	\$1,973,926	0%	N/A
	C1005051	369003 - Trans-Meas Reg Sta Loop	ILI Readiness - Strip 24 - Launcher	Safety and Maintenance	ARP - Installation of Launcher for In-Line Inspection Tool	\$1,380,000	\$2,306,027	67%	Project variance for this project were due to fees associated to the acquisition of the site development fine grading permit from Prince George's County
	C1005405	369003 - Trans-Meas Reg Sta Loop	ILI Readiness - Strip 15 Valve 15	Safety and Maintenance	ARP - Plug Valve Replacement with Ball Valve to allow for In-Line Inspection	\$1,772,000	\$2,287,349	29%	Contractor bid included an assumed depth of existing facilities based on available information. Upon excavation, facilities were deeper than anticipated. Additionally, extensive rock was encountered during the excavation. Finally, there were changes to the traffic control measures from the approved traffic control plans due to unforeseen on-site factors.
	C1005274	367100 - Trans - Mains - Loop	ILI Readiness - Strip 14 stopple	Safety and Maintenance	ARP - Removal of fittings to allow for Inline Inspection	\$1,289,000	\$1,789,320	39%	Project variance were mainly due to costs incurred due to delayed easement negotiation and access issues. Additional costs were also associated with unforeseen matting needed on the jobsite.
	C1005068	369003 - Trans-Meas Reg Sta Loop	Valve Replacement - Strip 1 Valve 13	Safety and Maintenance	ARP - Block valve replacement program - Aging valve	\$2,154,000	\$1,685,999	-22%	N/A
	C1005466	369003 - Trans-Meas Reg Sta Loop	Strip 6 Valve 2 - ARP VLV Replac	Safety and Maintenance	ARP - Block valve replacement program - Aging valve	\$1,352,000	\$1,589,919	18%	Toward the end of the project, permitting issues prevented the project from moving forward thus incurring additional pipeline contractor charges. In addition underestimated multiple stopple services costs that were needed due to permit delay
	C1005406	369003 - Trans-Meas Reg Sta Loop	ILI Readiness - Strip 15 Valve 12	Safety and Maintenance	ARP - Plug Valve Replacement with Ball Valve to allow for In-Line Inspection	\$1,337,000	\$1,514,882	13%	Additional contractor costs were incurred by Washington Gas not included in the estimate due to a delay while a specialty tool required for the insertion of the line stop final completion plug was fabricated. This was due to the fitting manufacturer shipping a different style completion plug than the typical model.
	C1005684	367100 - Trans - Mains - Loop	Strip 15 ILI B2B - Cleveland & 32nd	Safety and Maintenance	ARP - Replacement of fittings to allow for In-Line Inspection	\$1,060,000	\$1,493,633	41%	Given the main excavation location, in the middle of a 6 way intersection, additional contractor costs were incurred, including traffic control, final restoration (including concrete and paving). There was also an additional cost for the use of a draw down compressor, which was not initially part of the estimate.

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
	C1005407	369003 - Trans-Meas Reg Sta Loop	ILI Readiness - Strip 14 Valve 3	Safety and Maintenance	ARP - Plug Valve Replacement with Ball Valve to allow for In-Line Inspection	\$1,255,000	\$1,451,555	16%	Additional costs due to damage of a line stopper fitting during installation and testing. This required relocation of the line stopper fitting, and therefore additional excavation and increase to project duration.
	C1005509	369003 - Trans-Meas Reg Sta Loop	Strip 6 Valve 12 Replacement	Safety and Maintenance	ARP - Block valve replacement program - Aging valve	\$1,732,000	\$1,401,747	-19%	N/A
	C1005299	391210 - General - Computer Equip	End user OS Upg and Hard Refresh	IT	Significant physical technology assets are deployed at WGL, including servers, personal computing devices, networking equipment, and field equipment. These assets have refresh cycles of 4-5 years depending on the asset	\$738,095	\$1,110,378	50%	The end user hardware refresh program consist of WO C1005299 and WO C1005574. When both work orders are combined it is a variance of 3.6%. Therefore, no variance explanation is needed.
	C1005644	394000 - General - Tool,Shop,Gar Eq	Gas Detection Equipment	Safety and Maintenance	Replaced gas detection equipment to maintain accuracy and reliability	\$1,100,309	\$1,100,309	0%	N/A
	C1005693	367100 - Trans - Mains - Loop	Strip 15 ILI B2Bs- woodland and 31s	Safety and Maintenance	ARP - Replacement of fittings to allow for In-Line Inspection	\$1,060,000	\$1,274,091	20%	Line stopper fitting excavation had to be moved about 14' due to an existing utility being in the way, in addition there were higher restoration costs (including concrete and paving) as well as additional traffic control cost that was not accounted for in the estimate.
	C1005221	369003 - Trans-Meas Reg Sta Loop	Strip 14/15 Permanent Launcher	Safety and Maintenance	ARP - Installation of Launcher for In-Line Inspection Tool	\$1,459,000	\$1,214,899	-17%	N/A
	C1005236	369003 - Trans-Meas Reg Sta Loop	Strip 24 Receiver - ILI Readiness	Safety and Maintenance	ARP - Installation of Receiver for In-Line Inspection Tool	\$1,120,710	\$1,155,192	3%	N/A
	C1005298	303000 - Intangible - Computer SW	Utility Analytic Solutions	IT	Azure/AI - This improves access to data and enables analytics and reporting functionality that was not previously possible within the business. RPA - These solutions present process automation that results in improved operations Power Apps - tools that enable digitalization of manual processes by eliminating paper documents and consolidating management activities into a central tool instead of managers needing to work across documentation, data sets, and communication tools.	\$401,600	\$965,769	140%	Variance due to expanded scope and complexity than previously estimated.
	C1005395	363500 - Storage - Other Equipment	RVN-Fire Water Piping Replacement	Safety and Maintenance	Replace the original cast iron firewater piping (that had failed several times) to reduce risk and improve system safety and reliability.	\$972,800	\$1,013,412	4%	N/A
	C1002414	367100 - Trans - Mains - Loop	24" PipeL-Gardiner Rd to Crain Hwy	Safety and Maintenance	System reliability and reinforcement-Needed to assure system minimum pressures per system planning. Pipeline to connect WGL's Strip 24 line in Brandywine, Maryland to WGL's Strip 17 line in Landover; this work order is associated to surveys, studies, public outreach, and temporary construction space acquisition.	\$1,000,000	\$1,051,147	5%	N/A

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
	C1005302	367100 - Trans - Mains - Loop	Strip 4 Install of 24" Trans Main	Safety and Maintenance	Remove 24" Ball Valve and replace with 24" pipe	\$50,000	\$1,047,408	1995%	The original estimate was created to investigate a TIMP anomaly dig of the pipe at a valve vault location, the valve was excavated and the vault was found to be severely damaged. At that time it was determined that since the valve was scheduled to be removed/replaced within 3 years there was an opportunity for cost savings by replacing the valve at this time instead of coming back in 3 years and re-excavating the valve again.
	C1002643	303000 - Intangible - Computer SW	SAP Solutions Manager Upgrade	IT	Lifecycle upgrade of a component of our SAP application landscape to ensure operational reliability	\$240,000	\$876,962	265%	Project experienced increased complexity due to integration requirements and testing to ensure operational stability.
	C1005415	369003 - Trans-Meas Reg Sta Loop	Strip 7 Valve 8	Safety and Maintenance	Replacement of 24" Valve 8 on Strip 7 including the yoke assembly which contained 8" plug valves (Strip 18 valve 1 and 2) and a 6" blow off valve. It was determined from the exploratory dig that the 24" main was leaking at the pipe support downstream of Strip 7 Valve 8 but before Strip 18 Valve 2.	\$650,000	\$1,016,745	56%	Valve assembly (Strip 18 Valve 1 and 2) replaced in addition to replacing Strip 7 Valve 8
	C1005505	390004 - General-Struc&Improv Alloc	Purchase/Install 200 KW fuel cell	General Structure	Springfield Center was constructed in 2012 and included the installation of a Fuel Cell Energy System, that system was approaching end-of-life in 2022. The proposed replacement system reduced operation and maintenance expenses by 50% annually. The Solid Oxide Fuel Cell from Bloom represents a newer Natural Gas Technology for the production of electricity and is part of WGs overall emerging technologies initiatives. The use of Natural Gas in the Fuel Cell represents an electrical offset of roughly 20% of the electric required to operate the facility which does not need to be purchased from traditional electric suppliers.	\$900,000	\$844,980	-6%	N/A
	C1005683	367100 - Trans - Mains - Loop	Strip 15 ILLI B2Bs - Ellicott & 44th	Safety and Maintenance	ARP - Replacement of fittings to allow for In-Line Inspection	\$1,590,000	\$998,492	-37%	N/A
	C1005565	303000 - Intangible - Computer SW	Customer Call Center Regulatory Rep	IT	Provide capabilities to manage customer service call center performance and automate regulatory reporting requirements of said performance to Maryland and Washington, DC Public Service Commissions in accordance with current requirements of those commissions.	\$650,000	\$824,373	27%	The scope of the project was expanded to provide additional data extracts and reports to be developed.
	C1005567	303000 - Intangible - Computer SW	Arm Reports Enhancement - SOC	IT	Build an enhanced dashboard and reporting capabilities for Construction and SafetyNet using existing data sources such as ARM, PeopleSoft, Salesforce, SAP, etc., accessible via Power BI	\$1,257,334	\$794,548	-37%	N/A

BCA No.	WO No.	FERC Account	Project Name	Project Category	Project Need/Purpose	Estimated Cost	Actual Plant Additions	Variance %	Variance Explanation
	C1005422	303000 - Intangible - Computer SW	ESRI Foun Stabilization Digital Cos	IT	Complete establishment of new Esri UAT and migrate and test all current UAT applications, Complete establishment of new Esri PROD and migrate and test all current PROD applications, and Retire current UAT and PROD environments Outcomes Implement ESRI framework to support : 1) Resources to meet current applications in production, 2) Scalability to accommodate new operational demand, 3) Provide high availability to utility operations, and 4) Minimize downtime of core supported applications	\$650,000	\$790,834	22%	Project went on hold for lack of resource availability - restarted in 2023 and had additional technical complexity added as the future state requirements changed during the hold
	C1002895	303000 - Intangible - Computer SW	ARM Project Increment 3. SC. The pr	IT	Various enhancements and stability improvements within our work management application landscape to ensure operational reliability	\$2,140,000	\$786,676	-63%	N/A
	C1005574	303000 - Intangible - Computer SW	2023 WGL EUC Lifecycle	IT	Significant physical technology assets are deployed at WGL, including servers, personal computing devices, networking equipment, and field equipment. These assets have refresh cycles of 4-5 years depending on the asset	\$1,075,000	\$768,827	-28%	N/A
	C1005440	369003 - Trans-Meas Reg Sta Loop	Strip 38 PH7B - Reg Sta Brightseat	Safety and Maintenance	System reliability and reinforcement-Needed to assure system minimum pressures per system planning. Pipeline to connect WGL's Strip 24 line in Brandywine, Maryland to WGL's Strip 17 line in Landover; this work order is associated to installation of the regulator station at Brightseat Rd.	\$565,000	\$883,987	56%	a)Cost of work, including quantities on non-pipe items not included in initial estimate (e.g. restoration, traffic control, trench protection/sheet piling, timber matting,) b)Change in construction approach/method (e.g. direct bury v bore due to environmental restrictions or site conditions) c)Delays due to property owners
	C1005238	394000 - General - Tool,Shop,Gar Eq	Tie-in Equipment - Welding Shop	Safety and Maintenance	Upgrade the tapping/stop-off equipment to newer technologies in support of Construction and Below Ground Field Operations.	\$740,000	\$725,843	-2%	N/A
	C1005011	367100 - Trans - Mains - Loop	Chillum Washout	Safety and Maintenance	Remediation of washout conditions	\$900,000	\$862,955	-4%	N/A
	C1005258	367100 - Trans - Mains - Loop	Strip 14 Modification	Safety and Maintenance	Replacement/abandonment of pipe with incomplete records	\$710,000	\$862,256	21%	Estimate did not include costs associated to specialized training. The site prep and Backfill portions of estimate were underestimated originally.
	C1005435	367100 - Trans - Mains - Loop	Strip 24 ILI - Barred Tee Curtis Rd	Safety and Maintenance	Removal of fittings to allow for in-line inspection	\$900,000	\$843,960	-6%	N/A
	C1005287	390004 - General-Struc&Improv Alloc	Strip 38 - New Orchard Park (MNCPPC	Safety and Maintenance	Construction of Park per agreement with MNCPPC, associated with Landover Project	\$695,548	\$700,583	1%	N/A
	C1005235	394000 - General - Tool,Shop,Gar Eq	Tools Field Ops	Safety and Maintenance	Tools and equipment for Field Operations	\$275,060	\$605,869	120%	Required to mass update the personnel gas monitors for below ground field operations personnel.
	C1005454	367100 - Trans - Mains - Loop	Strip 12 TIMP Dig	Safety and Maintenance	Repair of anomalies found during TIMP Digs	\$438,000	\$699,439	60%	Location of anomalies was difficult to find resulting in additional excavations.
	C1002922	303000 - Intangible - Computer SW	People tools upgrade. SC. Upgrade of	IT	Lifecycle upgrade of a component of our PeoplesSoft application landscape to ensure operational reliability	\$450,000	\$582,325	29%	Project experienced increased complexity due to integration requirements and testing to ensure operational stability.
	C1002257	397100 - General - Comm Equipment	Mobile WFM Pilot	IT	Outfit Gas Supply Operations workforce with intrinsically safe operations specific laptops	\$545,327	\$545,327	0%	N/A

ATTESTATION

I, FREDERICK JOHN MORROW III, whose Testimony accompanies this attestation, state that such testimony was prepared by me or under my supervision; that I am familiar with the contents thereof; that the facts set forth therein are true and correct to the best of my knowledge, information and belief; and that I adopt the same as true and correct.

Frederick J. Morrow III

Frederick J. Morrow III

10/25/24

DATE

BEFORE THE
PUBLIC SERVICE COMMISSION OF THE
DISTRICT OF COLUMBIA

IN THE MATTER OF

THE APPLICATION OF WASHINGTON GAS
LIGHT COMPANY FOR AUTHORITY TO
INCREASE EXISTING RATES AND
CHARGES FOR GAS SERVICE

FORMAL CASE NO. 1180

WASHINGTON GAS LIGHT COMPANY
District of Columbia

SUPPLEMENTAL DIRECT TESTIMONY OF ANDREW LAWSON
Exhibit WG (20)

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V.	Impact on Service Requirements and Billing Determinants	5

WASHINGTON GAS LIGHT COMPANY

District of Columbia

SUPPLEMENTAL DIRECT TESTIMONY OF ANDREW LAWSON

Q. PLEASE STATE YOUR NAME.

A. My name is Andrew Lawson.

Q. ARE YOU THE SAME ANDREW LAWSON WHO HAS PREVIOUSLY SUBMITTED TESTIMONY IN THIS DOCKET ON BEHALF OF WASHINGTON GAS LIGHT COMPANY (“WASHINGTON GAS” OR “COMPANY”)?

A. Yes.

I. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My supplemental direct testimony is being filed in partial response to Commission Order No. 22311 in which the Public Service Commission of the District of Columbia (“Commission”) directed Washington Gas to “file supplemental testimony on the issues identified by the District of Columbia Government and the Apartment and Office Building Association of Metropolitan Washington in paragraphs 6 and 7 on November 4, 2024.”¹

Specifically, I respond to the request of the Apartment and Office Building Association of Metropolitan Washington (“AOBA”) for additional information on the following issues:

1. The Company’s evaluation of the affordability of natural gas service for its District customers by rate schedule;

¹ Commission Order No. 22311, ¶14.

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- 2. The impact of the Company’s proposed rate increases by rate schedule on expected changes in service requirements and billing determinants; and
- 3. The Company’s projected costs for Cast Iron Mains and the projected impacts of Cast Iron main replacement on rates.

II. IDENTIFICATION OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR TESTIMONY?

A. No, I do not.

III. ORGANIZATION OF TESTIMONY

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony is organized into three (3) additional sections, labeled IV through VI. Section IV provides the Company’s response regarding the affordability of natural gas service for its District customers. Section V provides an assessment of the impact of the Company’s proposed rate increases by rate schedule on expected changes in service requirements and billing determinants. And finally, Section VI addresses the impact of replacement of cast iron mains on rates.

IV. NATURAL GAS AFFORDABILITY

Q. WHAT IS THE FIRST ISSUE IDENTIFIED IN ORDER NO. 22311 THAT YOU WILL ADDRESS?

A. My testimony will first address an issue raised by AOBA identified in Paragraph 7 of Order No. 22311, which asks the Company to describe “The

1 Company's evaluation of the affordability of natural gas service for its District
2 customers by rate schedule.

3 **Q. IN WHAT WAYS DOES THE COMPANY EVALUATE AND INCORPORATE**
4 **AFFORDABILITY IN ITS RATE DESIGN?**

5 A. As I discussed in my Direct Testimony, rate design aims to accomplish
6 two goals: 1) establish rates that more closely align how costs are incurred; and
7 2) move customer rates, and therefore customer class returns, toward parity of
8 return.

9 First, as a general principle, the Company believes recovery of a larger
10 share of its fixed distribution costs through fixed charges promotes both bill
11 stability and affordability for customers. By recovering a larger share of fixed
12 distribution costs through fixed charges, bills can be spread more evenly over
13 the course of the year, dampening bill spikes in high usage winter months that
14 have a negative impact on affordability. The Commission should continue to
15 transition distribution cost recovery toward the customer charge and away from
16 variable charges.

17 Second, when evaluating the appropriate way to apportion rate
18 increases, the Company uses its class cost of service study as guide in
19 determining which customer classes are not generating the system average rate
20 of return and, therefore, should be apportioned a larger than average rate
21 increase. A simple mechanical approach to rate design would calculate the total
22 revenue increase/decrease required to bring each class to an even system
23 average rate of return. However, the Company recognizes that such drastic
24 movements may create an outsized rate increase burden for customers in the
25 under-earning classes. Therefore, the Company allocates the increase to the

1 under-earning classes in a way that considers gradualism and affordability
2 impacts as it increases revenues for those classes.

3 **Q. WHAT STANDARD DOES THE COMPANY USE TO INFORM HOW IT**
4 **ALLOCATES A RATE INCREASE TO UNDER-EARNING CLASSES TO**
5 **CONSIDER GRADUALISM AND MAINTAIN AFFORDABILITY WHEN**
6 **INCREASING RATES?**

7 A. While I am not aware of a universally accepted increase relative to the
8 system average, the Company has consistently maintained that the maximum
9 relative increase it considers acceptable is twice the system average increase.
10 However, when the revenue deficiency in a base rate proceeding is substantial,
11 as was the case in Formal Case No. 1169, and is again in this proceeding, it
12 may be appropriate to temper the movement toward parity of class return,
13 recognizing the impact the overall increase may have on under-earning classes
14 while also considering the impacts of recently implemented rate adjustments.
15 In Formal Case No. 1169, because the revenue deficiency in that case required
16 a substantial increase in operating revenues, I recommended that the customer
17 classes earning well-below the system average receive 150% of the system
18 average increase and classes earning closer to the system average rate of
19 return receive an increase of 125% of the system average. In this proceeding,
20 the customer classes earning well-below the system average are largely the
21 same under-earning classes as in Formal Case No. 1169. Because those
22 under-earning classes received 150% of the system-average increase effective
23 in January of this year, my judgment is that a smaller increase relative to the
24 system average is warranted in this case.

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**V. IMPACT ON SERVICE REQUIREMENTS
AND BILLING DETERMINANTS**

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Q. WHAT IS THE NEXT ISSUE IDENTIFIED IN ORDER NO. 22311 THAT YOU ADDRESS?

A. The second issue I address that is raised by AOBA and identified in Paragraph 7 of Order No. 22311, asks the Company to describe “[t]he impact of the Company’s proposed rate increases by rate schedule on expected changes in service requirements and billing determinants.”

Q. HOW DID YOU EVALUATE EXPECTED CHANGES IN SERVICE REQUIREMENTS AND BILLING DETERMINANTS AS A RESULT OF THE COMPANY’S PROPOSED RATE INCREASES BY RATE SCHEDULE?

A. The Company expects no changes in service requirements or billing determinants because of the Company’s proposed rate increases by rate schedule. The Company’s customer base in the District is largely comprised of customers that are unlikely to have a significant ability to shift their usage in the short-term, nor is the Company able to attribute meaningful changes in usage to past rate changes. As a result, the Company has no basis for concluding that the outcome of this base rate proceeding will cause a change in customer behavior that is not already reflected or adequately addressed in the Company’s rate case filing. With respect to changes in billing determinants that may occur by rate schedule, such changes can be evaluated with a standard price elasticity analysis.

Q. WHAT IS A PRICE ELASTICITY ANALYSIS?

A. A price elasticity analysis evaluates the price elasticity of demand. The price elasticity of demand can be defined as: “Price elasticity of demand is a

1 measurement of the change in the demand for a product as a result of a change
2 in its price”² and can be calculated mathematically as:

$$\begin{aligned} & \text{Price Elasticity of Demand} = \text{Percentage Change in Quantity Demanded} \\ & \div \text{Percentage Change in Price} \end{aligned}$$

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5 In the context of natural gas consumption, the price elasticity of natural
6 gas demand is the percentage change in the quantity of natural gas demanded
7 divided by the percentage change in price.

8 **Q. HOW DID YOU IDENTIFY ELASTICITY ESTIMATES?**

9 A. In this case, I did not create my own price elasticity analysis, I relied on
10 a relatively recent study undertaken by the U.S. Energy Information
11 Administration (“EIA”), the statistical and analytical agency within the U.S.
12 Department of Energy.³ The value of this study lies in its scope; *i.e.*, it develops
13 annual elasticity estimates for both the Residential and Commercial sectors. It
14 is also relatively recent, having been published in January 2021.

15 **Q. WHAT CONCLUSIONS DOES THE EIA STUDY DRAW WITH RESPECT TO**
16 **THE PRICE ELASTICITY OF DEMAND FOR NATURAL GAS?**

17 A. The EIA study estimates that in Year 1 of a price change, the rate
18 effective period in this case, for Residential customers a 1% increase in the
19 price of natural gas service will result in a 0.08% reduction in natural gas usage.
20 Likewise for Commercial customers, the study estimates a 1% increase in the
21 price of natural gas service will result in a 0.03% reduction in natural gas usage.⁴

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25 ² <https://www.investopedia.com/terms/p/priceelasticity.asp>

³ https://www.eia.gov/analysis/studies/buildings/energyuse/pdf/price_elasticities.pdf

⁴ See Link in footnote 4: Price Elasticity for Energy Use in Buildings of the United States, Page 3, Table 1

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VI. IMPACT OF CAST IRON MAIN REPLACEMENT ON RATES

Q. WHAT IS THE THIRD ISSUE IDENTIFIED IN ORDER NO. 22311 THAT YOU ADDRESS?

A. The final issue I will address that was raised by AOBA in Paragraph 7 of Order No. 22311 asks the Company to describe “the Company’s projected costs for Cast Iron Mains and the projected impacts of Cast Iron main replacement on rates.”

Q. WHAT ARE THE COMPANY’S PROJECTED COSTS FOR CAST IRON MAINS AND THE PROJECTED IMPACTS OF CAST IRON MAIN REPLACEMENT ON RATES?

A. During the test year in this case, the Company spent \$26.3 million on projects that involved the retirement of cast iron distribution mains. This cost for cast iron main replacement has been included in proposed rates (*i.e.*, the cost associated with the removal and installation of new main to replace cast iron) and is estimated at 1.9%⁵ of the total plant in service included in this case. Given that the Commission uses a historic test year and is currently considering the Company’s accelerated pipe replacement program, there is no basis for including the cost of any cast iron other than the above figures.

Q. DOES THAT COMPLETE YOUR SUPPLEMENTAL TESTIMONY AT THIS TIME?

⁵

Description	Reference	Amount
BCA – Cast Iron Retirements	Analysis.	\$ 26,319,332
Total Plant in Service	Exhibit WG (D)-1, page 2 of 4, line 1, column G.	<u>\$1,343,519,841</u>
Percent		<u>1.95%</u>

1 A. Yes, it does, subject to the reservation of rights included in the
2 Company's cover letter.

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ATTESTATION

I, R. ANDREW LAWSON, whose Testimony accompanies this Attestation, state that such testimony was prepared by me or under my supervision; that I am familiar with the contents thereof; that the facts set forth therein are true and correct to the best of my knowledge, information and belief; and that I adopt the same as true and correct.



R. ANDREW LAWSON

11/1/2024
DATE

BEFORE THE
PUBLIC SERVICE COMMISSION OF THE
DISTRICT OF COLUMBIA

IN THE MATTER OF)

THE APPLICATION OF WASHINGTON GAS)
LIGHT COMPANY FOR AUTHORITY TO)
INCREASE EXISTING RATES AND)
CHARGES FOR GAS SERVICE)

FORMAL CASE NO. 1180

WASHINGTON GAS LIGHT COMPANY
District of Columbia

SUPPLEMENTAL DIRECT TESTIMONY OF KEVIN MURPHY
Exhibit WG (P)

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Exhibits

	<u>Title</u>	<u>Exhibit</u>
	Step-by-step explanation of WG Process for project development.....	Exhibit WG (P)-1

WASHINGTON GAS LIGHT COMPANY

DISTRICT OF COLUMBIA

SUPPLEMENTAL TESTIMONY OF KEVIN MURPHY

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Q. PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A. My name is Kevin Murphy. I am Vice President, Asset Management, Engineering & Supply at Washington Gas Light Company (“Washington Gas” or “Company”). My business address is 6801 Industrial Road, Springfield, VA 22151.

Q. HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS PROCEEDING?

A. No, I have not.

Q. PLEASE DESCRIBE YOUR PROFESSIONAL AND EDUCATIONAL BACKGROUND.

A. I earned a Bachelor of Science degree in Mechanical Engineering from the University of Maryland in College Park. I am a Registered Professional Engineer, licensed by the State of Maryland with over 30 years of experience in design, construction, operations, and maintenance of gas distribution, transmission, and storage facilities. I began my employment with Washington Gas in January 1994, as Staff Engineer. From 1994 until 2007, I held progressive engineering and management positions including, Engineer, Senior Engineer, Section Leader - Production Engineering, Area Head - Production Engineering & Materials Management, and Area Head - Production Engineering & Drafting. In 2007, I assumed responsibility for Pressure Operations as Manager. From 2009 to 2011, my duties included management and oversight

1 of the Company's peak-shaving facilities. In June 2011, I was promoted to
2 Director – Operations Dispatch, Work Planning and Measurement. In August
3 2016, my responsibilities were expanded to include direction of the Company's
4 customer field service workforce. I assumed the role of Director – Energy
5 Acquisition in May 2019. In that role, I was responsible for leading the activities
6 of the Energy Acquisition department including supply portfolio management,
7 procurement, transportation, delivery service, and invoicing. In this role, my
8 duties included all operational and commercial aspects of the Washington Gas
9 asset optimization program: strategy development and execution, financial
10 reporting and performance, compliance, agent management, capacity
11 allocation, coordination between utility supply and trading operations, program
12 administrative functions and coordination with internal support units.

13 In September 2020, I began an interim assignment to lead the
14 Company's engineering, gas supply operations, and energy acquisition
15 functions, including transmission integrity management. In February 2021,
16 distribution integrity management was added to my portfolio of responsibilities.

17 In July 2021, I was appointed to my current role of Vice President – Asset
18 Management, Engineering and Supply. The Asset Management function
19 encompasses both distribution and transmission integrity, as well as integrity
20 management for the Company's process plant assets and system
21 planning. The Engineering function includes transmission, distribution, process,
22 and materials engineering. The Supply function covers gas supply operations,
23 which includes operational accountability for the Company's gate stations,
24 transmission system, regulator stations, peak shaving assets, gas control, and
25 operations technology. The Operations Technology team is responsible for the

1 Company's supervisory control and data acquisition ("SCADA") systems and
2 wide area networks ("WAN").

3 In my current role as Vice President, Asset Management, Engineering
4 and Supply Operations, I am responsible for overseeing the development and
5 execution of strategies for the replacement of leak-prone infrastructure,
6 including infrastructure replaced through the accelerated pipe replacement
7 program, among other duties to promote efficient operations across the
8 organizations that I oversee.

9 **Q. HAVE YOU TESTIFIED PREVIOUSLY IN OTHER PROCEEDINGS BEFORE**
10 **THE PUBLIC SERVICE COMMISSION OF THE DISTRICT OF COLUMBIA**
11 **("DC PSC" or "COMMISSION") OR OTHER REGULATORY AGENCIES?**

12 A. Yes. I have previously testified on behalf of Washington Gas before the
13 Commission in Formal Case No. 1137, a base rate case. I testified on behalf of
14 Washington Gas before the Maryland Public Service Commission a number of
15 times, including in Case No. 9035 (involving an investigation of leaks on the
16 Company's distribution system); in Case No. 9180 (involving evaluation of the
17 Company's capacity sourcing plans, with a focus on the proposed liquified
18 natural gas peaking facility); in Case No. 9322 (the Company's 2013 Maryland
19 rate case proceeding); in Case No. 9622 (involving the 2016 accident in Silver
20 Spring, Maryland); and in Case No. 9708 (involving the Company's request for
21 approval of its STRIDE 3 Plan). I have also filed testimony with the Virginia
22 State Corporation Commission in a rate-case proceeding, Case No. PUE-2016-
23 00001, and in the SAVE accelerated replacement proceeding Case No. PUR-
24 2022-000283.

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I. PURPOSE OF SUPPLEMENTAL TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY?

A. The purpose of my supplemental direct testimony is to address certain elements identified in the Commission’s Order No. 22311, issued in Formal Case No. 1180 on October 9, 2024.¹ Specifically, Order No. 22311, at page 3, section 3, directed Washington Gas to provide supplemental direct testimony on topics requested by the District of Columbia Government (“DCG”) and the Apartment and Office Building Association of Metropolitan Washington (“AOBA”). My supplemental direct testimony responds to topics requested by DCG related to the Company’s capital project planning and selection process, as identified in Section IV, below.

II. SUMMARY OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR TESTIMONY?

A. Yes, I am sponsoring Exhibit WG (P)-1, which provides a step-by-step explanation of the process used by Washington Gas for project development.

III. ORGANIZATION OF SUPPLEMENTAL TESTIMONY

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. The remainder of my testimony is organized into one additional section, with several subparts. Each subpart corresponds to a specific aspect of the Company’s capital project planning and selection process. In light of the fact

¹ Formal Case No. 1180, *In the Matter of the Application of Washington Gas Light Company for Authority to Increase Existing Rates and Charges for Gas Service*, Order No. 22311 (October 9, 2024).

1 that the capital planning projects at issue in the historic test year are
2 overwhelmingly distribution projects, my testimony focuses on distribution
3 capital planning.
4

5 **IV. CAPITAL PROJECT PLANNING AND SELECTION**

6 **Q. ARE YOU ADDRESSING SPECIFIC ASPECTS OF ORDER NO. 22311?**

7 A. Yes. I will address the directive to provide a “[d]etailed description of
8 WGL’s capital project planning and selection process.” I will begin by providing
9 a description of this process generally, and then provide further detail with
10 respect to several points of inquiry noted in Paragraph 6 of Order No. 22311.

11 **Q. HOW DOES WASHINGTON GAS APPROACH CAPITAL PLANNING IN THE**
12 **DISTRICT GENERALLY?**

13 A. Washington Gas employs a planning process that is designed to arrive
14 at a forward-looking estimate for capital investment in advance of each project
15 year that will support the portfolio of operational priorities it must address during
16 the upcoming year. At least annually, the Company goes through a planning
17 exercise that includes assessments of capital activities currently in process,
18 safety and Accelerated Pipe Replacement Programs (“APRP”), known or
19 anticipated customer growth (inclusive of new construction and conversions to
20 natural gas), and all other needs – referred to herein as safety and maintenance.
21 Safety and maintenance is inclusive of capital spending related to a variety of
22 assets, such as replacements that are not covered by APRP, pressure mains
23 and facilities (related to the Company’s integrated transmission system),
24 storage and pumping facilities, general plant, and distribution equipment. The
25 planning process is intended to arrive at a reasonable forward-looking estimate

1 of capital investment allocation based on available information during the
2 planning process that can then be used as a basis for operational planning and
3 an input into the Company's overall financial plan.

4 While this capital planning process is forward looking on a year-to-year
5 basis, the historical test year utilized in this case is backward looking.
6 Specifically, in this case, the ratemaking adjustments are premised on a test
7 year consisting of the 12 months ended March 31, 2024. The Company's
8 annual capital planning process is generally aligned with the calendar year, and
9 therefore the work completed in the test year was the result of two planning
10 cycles. The first capital planning cycle, covering the test year capital additions
11 from April 1, 2023 through December 31, 2023, concluded in the fourth quarter
12 of 2022 (i.e., before the Company began work on projects to be completed in
13 calendar year 2023). The second capital planning cycle, covering the test year
14 capital additions from January 1, 2024 through March 31, 2024, concluded in
15 the fourth quarter of 2023 (i.e., before the Company began work on projects to
16 be completed in calendar year 2024).

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18 **A. PROJECT NEED AND EVALUATION CRITERIA**

19 **Q. WHAT IS THE FIRST ISSUE IDENTIFIED IN ORDER NO. 22311 YOU WILL**
20 **ADDRESS?**

21 **A.** I first address a question raised by DCG and identified in Paragraph 6 of
22 Order No. 22311, which asks the Company to describe "[h]ow WGL identifies
23 project needs and the criteria used in this identification/evaluation."
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1 **Q. HOW DOES WASHINGTON GAS IDENTIFY PROJECT NEEDS?**

2 A. The vast majority of the capital projects identified in the District for the
3 historical test year fall into the following project categories: APRP; new business
4 and market enhancement projects; and safety and maintenance capital
5 projects. As noted above, most investment is associated with the distribution
6 asset class and my discussion is largely focused accordingly. Each of these
7 categories of projects are identified in diverse ways.

8 APRP projects enhance system safety, improve reliability, have the
9 potential to reduce greenhouse gas emissions, and are defined by eligibility
10 requirements established in the approved programs. Eligible assets are
11 grouped into projects using the Company's GIS and with insights derived from
12 direct field observations of the pipe condition and the Company's asset risk
13 model.

14 New business and market enhancement projects are driven by customer
15 requests. New business construction projects bring gas service to sites where
16 existing mains are not readily accessible, whereas market enhancements
17 typically involve existing structures with access to an existing main, and often
18 involve a conversion to gas from another energy source.

19 Finally, safety and maintenance capital projects make up the balance of
20 capital investments and are driven by a variety of considerations. These
21 projects often arise in the same way as APRP projects, but do not meet the
22 eligibility criteria or are in excess of Commission-approved funding constraints
23 for a given program. Projects may be identified to address specific emergent
24 threats, such as an exposed pipeline due to erosion or increased leaks due to
25 heavy construction in areas with existing cast iron mains that are susceptible to

1 cracking and increased joint leaks. Maintenance capital projects are also
2 identified through coordination with outside stakeholders such as private
3 developers, government agencies, or individual customers. These projects
4 relocate, replace, and/or abandon mains and services that conflict with
5 construction work proposed by entities outside the Company. By eliminating
6 conflicts between existing natural gas piping and proposed structures or utilities,
7 the likelihood of third-party damage is decreased, while the safety and reliability
8 of the distribution system is enhanced. Gas supply to the District of Columbia
9 is made possible by a network of upstream transmission pipelines and facilities.
10 To maintain safety, reliability, and compliance for this set of assets, the
11 Company identifies projects through its Asset Management and System
12 Planning functions, with insights from risk and hydraulic network models.

13 **Q. WHAT CRITERIA DOES WASHINGTON GAS USE TO IDENTIFY GAS**
14 **DISTRIBUTION PROJECTS?**

15 A. The Company applies identification criteria appropriate to each category
16 of project: APRP, safety and maintenance, and new business. I will address
17 the criteria for each category separately below.

18 **Q. WHAT CRITERIA DOES WASHINGTON GAS USE TO IDENTIFY APRP GAS**
19 **DISTRIBUTION PROJECTS?**

20 A. For the APRP category, projects are localized groupings of similar assets
21 based on criteria such as age, material of construction, operating pressure, and
22 risk profile. To maintain and operate a safe, compliant and reliable distribution
23 system, the Company uses sophisticated risk analysis and threat models for
24 each individual distribution piping asset. Risk analysis is informed by criteria
25 such as the applicability and likelihood of integrity threats, and the

1 consequences of realizing each applicable threat. The operating risk
2 associated with each asset can then be rolled up into a risk assessment for its
3 associated project group. Criteria related to the size of needed projects are also
4 applied to limit the duration of any project and provide appropriate resolution for
5 effective project control. While not subject to rigidly applied rules, service only
6 replacement projects are generally selected to include at least 10 services
7 within an area not larger than approximately 115 acres², while main
8 replacement projects include at least 300 feet but not more than 3,000 feet. In
9 addition, emergency or expedited work is performed to replace APRP-eligible
10 assets when facilities are referred for replacement by Washington Gas Field
11 Operations based on direct observation of deteriorated mains and services,
12 witnessed during operations and maintenance of the distribution system. This
13 includes circumstances where repairs are no longer feasible, and replacement
14 is the only option to maintain service to existing customers.

15 **Q. WHAT CRITERIA ARE USED TO IDENTIFY SAFETY AND MAINTENANCE**
16 **GAS DISTRIBUTION PROJECTS?**

17 A. Safety and maintenance capital projects include those identified by
18 external third parties, such as the District Department of Transportation
19 (“DDOT”), Pepco, or DC Water. Washington Gas routinely works with various
20 entities to relocate facilities in the public right-of-way, often referred to internally
21 as Advance of Paving (“AOP”) work. Under right-of-way agreements,
22 Washington Gas is required to relocate or remove its facilities at the request of
23 the grantor. The Company works to mitigate conflicts between the proposed
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25 ² Consistent with the size of a quad map, which is a unit of area within the Company’s mapping system.

1 work and Washington Gas's infrastructure and thereby limit these replacement
2 activities. When mitigation strategies are not adequate or possible, the
3 Company is required to offset or move its facilities to prevent damage to its
4 facilities. When considering work by others occurring in the right-of-way, even
5 if no direct conflict is anticipated, the timing, scope, expected impact to gas
6 facilities, and prospects for future maintenance related excavations in freshly
7 paved/improved streets are criteria considered by the Company. Where
8 possible, the Company prefers to coordinate its activities with other work to
9 make the most of limited resources and minimize the impact to District residents
10 and businesses. Also, the Company works with individual customers to perform
11 customer requested service relocations and service abandonments. All of these
12 activities involve the alteration of service lines permanently or temporarily to
13 accommodate some construction being performed on private property.
14 Completing these requests can help limit the number of third-party damages
15 caused by excavation activity.

16 In addition, safety and maintenance projects include those that are
17 revealed through the risk analysis process used for APRP, but are not within
18 the scope of the APRP program, as well as projects that emerge as
19 operationally necessary during the course of the year, including projects that
20 arise from third party line strikes or customer requested activities such as
21 relocations and disconnects.

22 **Q. WHAT CRITERIA ARE USED TO IDENTIFY NEW BUSINESS GAS**
23 **DISTRIBUTION PROJECTS?**

24 A. For customer-initiated new business and market enhancement projects,
25 Chapter 37 (Natural Gas Quality of Service Standards and Reliability

1 Performance), of Title 15 (Public Utilities and Cable Television) of the DC
2 Municipal Regulations, prescribes Washington Gas's responsibility to its
3 customers to provide an adequate level of quality, reliability, and safety in the
4 provision of natural gas service, including timely new service installations and
5 response to customer requests.

6 **B. PRIORITIZATION OF CAPITAL PROJECTS**

7 **Q. WHAT IS THE NEXT ISSUE IDENTIFIED IN ORDER NO. 22311 YOU WILL**
8 **ADDRESS?**

9 A. Next, I will address a question raised by DCG and identified in Paragraph
10 6 of Order No. 22311, which asks the Company to describe "[h]ow WGL
11 prioritizes capital projects (differentiated, as appropriate, between different
12 types of capital projects)."

13 **Q. HOW DOES WASHINGTON GAS PRIORITIZE CAPITAL PROJECTS**
14 **GENERALLY?**

15 A. In its capital planning process, the Company first categorizes projects as
16 APRP, safety and maintenance, or new business/market enhancement.
17 Allocation of funds to these categories is then aligned with corporate strategic
18 objectives that are informed by safety, reliability and value-driven
19 considerations, based on both historical spend in the categories and future
20 anticipated system needs, which in turn must be guided by the availability of
21 Company resources (e.g., crews). Allocations are managed throughout the
22 year between the three project categories as the Company's needs for the
23 system evolve and field developments arise. Beyond prioritizing between the
24 three categories of capital projects, the Company uses distinct processes to
25 prioritize within those three categories.

1 **Q. HOW DOES WASHINGTON GAS PRIORITIZE APRP PROJECTS?**

2 A. APRP projects are prioritized using risk analysis criteria that are applied
3 to the entire distribution piping class of assets via the Company's risk model.
4 The model is used to evaluate different types of threats and considers the fact
5 that third-party damage, joint failure, and corrosion threats are very different. A
6 probabilistic approach is applied to further break down these threats into more
7 specific events that can lead to pipe failure, capturing the unique failure
8 mechanisms of each. For example, the threat of natural forces damage on a
9 distribution pipe segment is modeled as separate sub-threats for rain or flood
10 damage, earth movement, frost heave, and lightning strikes. For each of these
11 sub-threats, the likelihood of various outcomes that may arise from a leak is
12 calculated.

13 Lastly, a set of consequences are calculated for each of these outcomes,
14 capturing impacts along a variety of dimensions including health and safety,
15 environmental, community, direct impacts (e.g., property damage, repair, etc.),
16 and regulatory consequences. This calculation accounts for both the probability
17 of each consequence factor and the associated impact, considering the
18 characteristics of the asset (such as its location) and historical industry data.

19 This type of analysis is performed for each threat category and for each
20 asset in the system. As a result, the model output gives a broad representation
21 of the range of possible outcomes. The individual outputs are also combined to
22 estimate the total risk on any given asset or group of assets, while ensuring that
23 the underlying mechanisms driving each threat, as well as uncertainties in the
24 data, are considered.

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1 Once the risk has been assessed for assets associated with each project,
2 a parametric estimate of the cost for each project is produced. The Company
3 then ranks projects to achieve the greatest reduction of overall risk per dollar
4 invested. This basic prioritization may then be modified as appropriate to
5 consider poor asset conditions observed directly by Company personnel,
6 alignment with schedules for work compelled by others, and completion of work
7 in-process.

8 **Q. HOW DOES WASHINGTON GAS PRIORITIZE SAFETY AND**
9 **MAINTENANCE CAPITAL PROJECTS?**

10 A. For safety and maintenance capital projects, prioritization is driven in one
11 of three ways. For projects that are done at the behest of others, prioritization
12 is achieved in coordination with outside stakeholders, such as private
13 developers, government agencies, or other utilities and takes into consideration
14 their timeline for project development. For replacement of facilities that are
15 safety driven but not APRP eligible, the Company prioritizes through the same
16 safety analysis described above for APRP facilities. For all other system
17 maintenance activities captured in this category, there are a diverse set of
18 drivers that establish project priority on the distribution system. To a large
19 extent, the balance of the work is reactive to emergent system issues (e.g., third
20 party line strike), or responsive to customer requested activities (e.g.,
21 relocations and disconnects).

22 **Q. HOW DOES WASHINGTON GAS PRIORITIZE NEW BUSINESS CAPITAL**
23 **PROJECTS?**

24 A. New business projects includes new construction and market
25 enhancement projects that are driven by customer requests. These new

1 business projects are prioritized in accordance with the customer requested
2 schedule and available company crew resources.

3 **C. EVALUATION OF ALTERNATIVES**

4 **Q. WHAT ARE THE NEXT ISSUES IDENTIFIED IN ORDER NO. 22311 YOU**
5 **WILL ADDRESS?**

6 A. Next, I will address issues raised by DCG and identified in Paragraph 6
7 of Order No. 22311, which asks the Company to describe “[w]hat processes and
8 criteria WGL uses to identify alternative approaches to meet the need, from
9 which it selects the executed project approach,” and “[h]ow WGL selects the
10 approach from among alternatives.”

11 **Q. DOES WASHINGTON GAS EVALUATE OR IDENTIFY ALTERNATIVE**
12 **APPROACHES FOR PIPELINE REPLACEMENT PROJECTS?**

13 A. For the vast majority of pipeline replacement projects undertaken by
14 Washington Gas in the District, there are currently no adequate alternatives to
15 pipeline replacement that will provide customers with safe and reliable natural
16 gas service. Consistent with the Company’s Distribution Integrity Management
17 Program (“DIMP”), Washington Gas does assess abandonment where no
18 customers are being served or will be impacted by abandonment of the facilities.
19 Where the Company has identified the need for pipeline replacement, spot
20 repairs have already been determined not to be an adequate alternative to
21 ensure safety and reliability. Further, I note that the Commission has not
22 approved, and the District government has not mandated, any such alternative
23 analysis.

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D. PROJECT DEVELOPMENT AND AUTHORIZATION

Q. WHAT ARE THE NEXT ISSUES IDENTIFIED IN ORDER NO. 22311 YOU WILL ADDRESS?

A. Next, I will address the issues raised by DCG and identified in Paragraph 6 of Order No. 22311, which ask the Company to describe “[t]he process flow (and typical timeline if available) of project development from need identification through to execution” and “[w]hat internal approvals are required at what stage and scale of project development and execution.”

Q. HOW DOES WASHINGTON GAS ENGINEER THE SCOPE OF CAPITAL PROJECTS DURING THE PROJECT DEVELOPMENT PROCESS?

A. Once the need for projects is identified, distribution projects go through the engineering process. Distribution projects that entail significant engineering requirements are generally comprised of replacement work, as these represent the most complex of the distribution designs due to the need to maintain service and system integrity during the construction process. Within the District, these are also the most common projects necessitating engineering oversight. Included with my testimony as Exhibit WG (P)-1 is a step-by-step explanation of the process used by Washington Gas for project development.

Q. WHAT IS THE TYPICAL TIMELINE FOR PROJECT DEVELOPMENT, INCLUDING THE TIMING OF APPROVALS?

A. Between August and January of each year, the DIMP team updates its risk model and produces current results. As discussed previously, these results, in concert with parametric cost estimates, establish the project priorities. Prioritized capital replacement projects then undergo research and design. The Company’s design contractors research existing records, map existing utilities and roadway

1 profiles, and design construction drawings in accordance with pipe size and
2 bypass requirements identified by the Company's System Planning group. This
3 process occurs between January and October annually. Preliminary construction
4 plans are reviewed by the Washington Gas Construction Managers and
5 Supervisors for constructability and accuracy. Site-specific TCPs and permit
6 applications are prepared and submitted for approval.³ For large projects, the
7 Company may request Miss Utility to mark the existing utilities for a site walk to
8 lessen the likelihood of a conflict arising in the field. Any resulting updates are
9 made, any further available information is incorporated into the prioritization
10 process, and for the APRP projects, project details are submitted with annual
11 project lists filed with the Commission, typically at the end of October. It is
12 important to note that not all permits will be secured, nor are all permit conditions
13 known, at the time the APRP list is filed.

14 Once the construction plans have been completed and approved, the
15 project is reviewed and authorized. Authorization requires sign-off from roles
16 higher in the Company's organization, commensurate with the total project cost
17 estimate and in accordance with spending authority limits established by
18 Company role. When the project is fully authorized and permitted, the
19 Company's construction contractor can notify customers, schedule work, and
20 execute the project under the oversight of the Company's Project Management
21 & Construction personnel, as discussed by Company Witness Morrow.

24 ³ The requirements for, and nature of, any external approvals is project specific. Obtaining external
25 approval is an independent process that may have impacts on the timing of various stages and
completion of the project. Approval times vary by agency and according to the number of revisions
requested during review.

E. PROJECT ESTIMATES

Q. WHAT IS THE NEXT ISSUE IDENTIFIED IN ORDER NO. 22311 YOU WILL ADDRESS?

A. Next, I will address the issue raised by DCG and identified in Paragraph 6 of Order No. 22311, which asks the Company to describe “[h]ow WGL develops and refines project engineering estimates.”

Q. HOW DOES WASHINGTON GAS DEVELOP AND REFINE PROJECT ESTIMATES?

A. The Company utilizes a variety of cost estimate methodologies dependent on the project need and detail. For the majority of its capital planning projects, the Company begins with the estimated project scope, the development of which is described above, and unit-based contractor requirements, then factors in additional considerations for project location, such as paving and restoration requirements, etc. For those projects subject to the accelerated replacement program in the District, project estimates are refined, with direct review and input by the Construction and Project Management functions, to reflect the Association for Advancement of Cost Engineering (“AACE”) Class 3 estimating criteria, in accordance with Commission Order No. 20671.

For safety and maintenance projects, the Company’s estimates are developed using a variety of methods, given the variety of activities included in this category. These estimates generally fit into one of the following estimation approaches at the point in time the estimate was developed:

- A historically derived estimate of future units and costs. This is most prevalent when estimating readily known recurring activities where the precise work locations or scope are not known (*i.e.*, the Company can

1 readily expect a volume of service replacements but does not know in
2 advance precisely which service lines will be involved).

- 3 • A pre-design cost estimate based on an estimated project scope.
- 4 • An engineered design and cost estimate based on known project scope
5 (including projects potentially in progress).
- 6 • A known quote/bid or similar firm price.

7 For new business and market enhancement projects, the Company
8 develops estimates using a cost per meter analysis that is based on contractor
9 rates with supplemental costs based on historical actuals for additional items
10 such as paving, permits, backfill, and other non-labor items.

11 **Q. WHAT IS THE BASIS OF THE COMPANY'S COST ESTIMATES FOR**
12 **PROJECTS?**

13 A. Washington Gas distribution project estimates are based on the results
14 of multi-year alliance construction contracts that are established through
15 rigorous bidding and negotiated unit pricing (per foot or lump sum) to obtain
16 competitive unit prices in the market from qualified contractors. Each of the unit-
17 based contracts includes specific per unit prices for various types of work, based
18 on each of the Company's specific service territories. Aggregate actual pricing
19 arising from these contracts is analyzed and categorized annually to serve as
20 the basis for estimating.

21 **F. PROJECT VARIANCES**

22 **Q. WHAT IS THE NEXT ISSUE IDENTIFIED IN ORDER NO. 22311 YOU WILL**
23 **ADDRESS?**

24 A. Next, I will address the issue raised by DCG and identified in Paragraph
25 6 of Order No. 22311, which asks the Company to describe "[h]ow WGL tracks
changes and variance in project scope and cost, including the threshold

1 variance in cost that requires documentation via a project variance or
2 reauthorization process.”

3 **Q. WHAT CAUSES VARIANCES BETWEEN ESTIMATES AND ACTUAL**
4 **PROJECT COSTS?**

5 A. Variances are largely caused by elements that are not within the control
6 of Washington Gas and which, therefore, cannot be specifically known and
7 quantified at the time of the cost estimate. The Company has identified variance
8 drivers, including: (1) permit restrictions on work hours, traffic control
9 requirements (vehicular, bicycle and pedestrian), tree protection, spoil removal
10 and backfill requirements, permitting design and the oversight of those design
11 requirements; (2) labor costs and inflation; and (3) jurisdictional paving limits.
12 These cost drivers are not known, nor would they be known in the engineering
13 process, prior to the project’s design being finalized, the estimate being created,
14 the project being released to the qualified contractor and the pre and post-job
15 communications occurring with the jurisdiction. Moreover, unexpected field
16 conditions — such as difficult rock formations slowing excavation or requiring
17 additional equipment, other underground utility facilities presenting a challenge
18 to excavation by equipment versus hand-digging, or inclement weather that may
19 restrict working hours or require additional accommodations — will also cause
20 variances between the cost of the engineered project and the final project.

21 **Q. HOW DOES WASHINGTON GAS IDENTIFY AND ADDRESS VARIANCES IN**
22 **PROJECT COSTS?**

23 A. Estimates are captured at a point in time, with the intent to provide an
24 understanding of the overall portfolio of capital needs that can then be used as
25 a basis for operational and financial planning purposes. Although the Company

1 creates estimates for its projects, the actual cost and the estimated cost will
2 almost always vary, due to changes in the scope, underlying unit costs, or other
3 drivers that occur in the field that produce a deviation from the original estimate,
4 as described above.

5 **Q. IS THERE A VARIANCE THRESHOLD THAT REQUIRES INTERNAL**
6 **REAUTHORIZATION?**

7 A. Yes. The Company has an internal process that provides for
8 reauthorization should a project exceed its estimate beyond specified limits. If
9 the scope of the Business Case Authorization or the construction method
10 significantly changes after the project has been authorized but before
11 construction is underway, the project is subject to a re-authorization. A change
12 is considered significant if: (1) the footage involved changes by more than 25%;
13 or (2) the construction approach changes for more than 50% of the involved
14 footage. Where either condition 1 or 2 occurs, a price increase will result above
15 the previously authorized amount and require a re-authorization of the
16 engineered project. In addition, the Company has a process for addressing
17 variances experienced in the field that are described in Witness Morrow's
18 supplemental direct testimony.

19 **Q. HOW DOES WASHINGTON GAS ENSURE VARIANCES DO NOT**
20 **REPRESENT UNNECESSARY COSTS?**

21 A. Company management personnel review and approve only units that are
22 necessary and appropriate for each project prior to payment. Washington Gas
23 management personnel provide oversight for all work that is performed on the
24 Company's system. This oversight not only provides for safe, quality
25 installations, but also provides thorough oversight of all proposed field design

1 changes and any associated pay items required to complete the work on each
2 project. Company management personnel provide oversight of the construction
3 contractors to confirm installation of the facilities per required specifications, and
4 per contract pricing pay item definitions.

5 Taken together, the Company's competitive bidding process and
6 management oversight validate that expenditures on construction projects are
7 necessary, prudent, and comply with competitively sourced contract pricing.
8 The Company's process ensures that projects are necessary, and that the costs
9 incurred are reasonable for the work that must be done.

10 **Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL DIRECT TESTIMONY?**

11 A. Yes, it does, subject to the reservation of rights included in the
12 Company's cover letter.

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Step-By-Step Project Development Process Used by Washington Gas

1. A replacement engineer is assigned and performs a review, determines a logical project scope and creates a project in the Company's work management system.
2. The replacement engineer develops and implements the design schedule.
3. The project is reviewed by the System Planning department for validation of the size, material, tie in locations, any bypass requirements or temperature constraints during construction as well as any potential interaction with other proposed or ongoing projects.
4. Outside engineering resources, under the direction of the assigned internal engineer are then engaged to:
 - a. Perform detailed records research to confirm the targeted facilities to be replaced.
 - b. Create a preliminary design which meets the system planning requirements, for review.
 - c. Initiate various reviews of the preliminary design as needed, i.e. survey, construction, pressure ops, cathodic protection, valving and paving.
 - d. Incorporate feedback into designs, develop traffic control plans ("TCP"), complete permit application for the construction permit, develop and route for review and approval a sequence of operations.
 - e. Develop initial costs estimate.
 - f. Perform internal quality reviews of design deliverables.
 - g. Conduct a Professional Engineer ("P.E.") review and application of P.E. stamp to final drawings.
 - h. Identify any long lead or special materials.
5. The assigned replacement engineer performs a final design review, confirming project scope, checking for design completeness, as well as consistency with the System Planning requirements, before assembling

the necessary approval documents and routing for approval and project authorization.

6. The project is reviewed and updated as needed by Construction and the Project Management groups before being authorized by functional leaders.
7. The project at this point is turned over to the Project Management and Construction functions for execution with the engineering function supporting if/as needed.

ATTESTATION

I, KEVIN MURPHY, whose Testimony accompanies this Attestation, state that such testimony was prepared by me or under my supervision; that I am familiar with the contents thereof; that the facts set forth therein are true and correct to the best of my knowledge, information and belief; and that I adopt the same as true and correct.



KEVIN MURPHY

October 30, 2024

DATE

CERTIFICATE OF SERVICE

I, the undersigned counsel, hereby certify that on this 4th day of November 2024, I caused copies of the foregoing document to be hand-delivered, mailed, postage-prepaid, or electronically delivered to the following:

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A handwritten signature in blue ink, appearing to read "John C. Dodge", is positioned above a horizontal line.

JOHN C. DODGE