BEFORE THE
PUBLIC SERVICE COMMISSION
OF THE DISTRICT OF COLUMBIA

IN THE MATTER OF:

The Investigation into Washington Gas Light	**)**	
Company's Strategically Targeted Pipe	**)**	**Formal Case 1179**
Replacement Plan	**)**	

AFFIDAVIT OF DR. ASA S. HOPKINS

I. INTRODUCTION

2. I, Dr. Asa S. Hopkins, currently serve as Senior Vice President, Consulting at Synapse Energy Economics, Inc. (Synapse). My experience and qualifications are set forth on pages 1-2 of my Direct Testimony submitted on behalf of the District of Columbia Government in this proceeding (Exh. DCG (A), pgs. 1-2, filed Dec. 10, 2024). This affidavit was prepared by me or under my direct supervision and control.

3. I am submitting this affidavit to record my observations while viewing and working with the data contained in Washington Gas Light Company's (WGL or the Company) Geographic Information System (GIS) database this past July 23rd and 24th at Synapse's office located in Cambridge, MA.

4. WGL's GIS database was housed on a laptop that was physically transported from the Washington, D.C. area by a WGL employee. Because WGL considers the information contained in the GIS database to be highly Critical Energy Infrastructure Information (CEII), every person on the Synapse team that accessed the information was required to execute a CEII confidentiality agreement, restricting how the information contained in the GIS database can be documented and shared. In addition to myself, the Synapse team reviewing the GIS database

included Ellen Carlson, who has extensive experience working with various GIS software programs including ArcGIS Pro, the program used by WGL.

II. RELEVANCE OF GIS INFORMATION

5. The capabilities of the GIS software, when loaded with the data provided by WGL in earlier discovery in this docket and Formal Case No. 1154, allow the user to perform searches of the mains and services on WGL's District pipeline distribution system using the following search parameters: material, diameter, year of installation, JANA risk, estimated cost of replacement, BCA ID, FID, and segment length. By entering specific queries, I was able to view the location of pipeline assets sharing similar characteristics on WGL's District system.

6. The value of this locational information from WGL's GIS database is that it allows the user to not only view the relative location of main and service assets of similar material and vintage, but also to match the assets with other information WGL produced through discovery, such as the JANA risk score assigned to each asset and the associated cost of replacement where available, to form a better understanding of the projects selected by WGL for replacement – and importantly, those assets *not* selected by WGL for replacement.

7. Access to WGL's GIS database enabled me to understand the extent to which the distribution of risk reduction cost-effectiveness extends across projects on WGL's system, which is essential for understanding the impact of WGL's project choices on overall system cost and risk. I was therefore able to test whether WGL's "strategically targeted" pipe replacement program would achieve its goal of obtaining the highest risk reduction per dollar spent.

III. OBSERVATIONS FROM GIS DATABASE REVIEW

8. WGL claims to prioritize pipes based on risk reduction per $10k of projected cost. But my review revealed that WGL proposes to spend millions of dollars on projects that fall far down the priority list based on that metric.

9. Further, in my review of the GIS data, I was able to identify locations that could make promising replacement projects, but which were not selected by WGL. These locations have an estimated risk reduction per dollar spent that would place them in the upper reaches of WGL's system-wide ranked list, higher than projects selected by WGL, yet these projects have not been selected and have no overlap with projects completed or selected to date by WGL's replacement program.

10. WGL's responses to DCG's post-GIS-review, follow-up data requests revealed another interesting inaccuracy. WGL repeatedly asserts that it must have accelerated cost recovery for pipe replacement and risk reduction. However, in its response to DCG Follow Up DR 2-1, Attachment 02, I learned that the reason that eight (8) of their highest risk-reduction-per-dollar-spent potential projects were not pursued was that "Services are being replaced under individual work orders, not a BCA." That means that WGL is spending on higher priority risk reduction pipe replacement outside of the surcharge-funded Project Pipes program but receiving only "normal" cost recovery for it after the next base rate case. It is unclear to me why WGL needs accelerated funding to execute projects that yield less risk reduction per dollar spent than normal pipe replacement projects.

11. In addition, I wanted to test WGL witness Jacas's assertion in rebuttal testimony that "[t]he grouping of services in geographical areas or 'quads' allows the Company to efficiently deploy resources, reduce costs, and minimize disturbance to the Community while replacing the

eligible services with the most risk using the risk reduced per dollar spent metric."[1] This assertion is echoed by WGL witness Stuber's assertion that the reason the 2025 extension project list displays an "increased quantity of service-only projects" is because the JANA risk model provides "a more robust, wholistic and probabilistic analysis of the risk reduction for all main and service as well as service-only assets. When considering the factors around service only replacements, those facilities identified for replacement have a higher probability of leaks based on the data inputs (e.g., age, material, etc.), are located in close proximity to dwellings, and have a lower cost of replacement while having a higher reduction in risk, thereby reflecting the most cost-effective option for removing risk from the Washington Gas system."[2]

12. But in the course of my review of the GIS database, I observed that the projects on WGL's 2025 service-only project list are generally scattered across one neighborhood or area of the city, and display little evidence of a plan optimized for risk-reduction per dollar spent. There are numerous services in each neighborhood that are more cost-effective to replace (as measured by the risk of the existing asset and WGL's estimated replacement cost) than the services selected as part of WGL's 2025 projects.

13. My review also called into question a statement in the District SAFE Application, which states "[a]s part of District SAFE, Washington Gas is proposing one primary program, encompassing all of the previously approved sub-programs, and will identify annual project lists on a risk reduced per dollar spent basis to maximize the reduction of risk, and, therefore, improve safety on the distribution system. The Company will use its currently implemented risk model (e.g., JANA Lighthouse) to prioritize and establish the annual project list that can be accomplished within the annual program budget identified in Table 4."

[1] Exh. WG (2C), at pg 59, lines 3-7.
[2] Exh. WG (D), at pg. 13, lines 6-14.

14. But the 2025 project list (developed using the JANA system) contains seven new projects identified as being selected based on JANA risk modeling and containing both mains and services. These projects have a risk reduction per $10,000 spent of 542.49, 541.62, 363.93, 438.38, 867.44, 849.53, and 621.06. If WGL were executing its stated plan to maximize the reduction of risk within a constrained budget, these would be the most cost-effective mains + services projects available. In my evaluation of WGL's data, I was able to identify six additional potential mains + services projects of comparable scale to WGL's projects that have risk reductions per $10,000 spent of 632.59, 641.84, 768.31, 727.09, 672.74, and 600.98 – all higher than five (5) of WGL's seven (7) proposed projects.

15. The five less cost-effective projects in WGL's 2025 project list (those with risk reductions per $10,000 less than 650) would rank 353rd, 354th, 996th, 584th, and 283rd (respectively) in the list of potential projects or bundles ranked by risk cost-effectiveness that WGL provided in response to DCG Follow-Up DR 2-1(A)(c) ("JANA Run 20230820 DC Risk by Bundles - BCA values"). The six potential projects that I identified would rank 276th, 275th, 336th, 202nd, 223rd, 255th, and 300th (respectively) if they were considered as projects on WGL's list. Only one of WGL's five less cost-effective selected projects would rank as more cost-effective than any of the six projects that I found.

16. If WGL were to replace its five proposed projects that have cost effectiveness below 650 (that have an average cost effectiveness of about 500) with projects that averaged 670 (like the portfolio I identified during discovery), ratepayers could either achieve the same risk reduction for 25 percent less money, or achieve a 1/3 increase in risk reduction for the same cost.

17. Indeed, I was also able to identify a clustered service-only project with a risk-reduction-per-$10k spent that exceeds the cost-effectiveness any of the service-only projects proposed by WGL for 2025.

18. Regarding scattered services, I identified 3,454 copper, bare steel, and wrapped steel services that are connected to relatively low-risk mains (and thus not good prospects for a mains + services project) yet nonetheless collectively have risk reduction cost-effectiveness that would exceed all but two of the service-only replacement projects that WGL proposed for the ProjectPipes 2 extension in 2025 (which collectively would replace 265 services). WGL could have selected services projects to replace that would have reduced risk by roughly 50 percent more, per dollar spent, than its proposed services-only projects that are supposedly selected based on a risk-cost-effectiveness framework.

19. In addition, I also used the locational information from WGL's GIS database to determine the extent to which WGL "identif[ies] the number of miles of mains and number of services that can be decommissioned each year of the program either due to abandonment of redundant facilities or customers pursuing electrification opportunities on radial portions of the system."[3]

20. Specifically, WGL Jacas states "[i]t must be noted that there are relatively few locations on the Washington Gas system in the District, and particularly those areas served by vintage materials, that would meet the criteria required for Witness Lyman's scenario to be applicable (i.e., isolated pipe segments, radial lines, and dead-ends that are not interconnected and would not impact flow). To the extent such locations exist and are not needed to serve customers,

[3] F.C. 1179, Order No. 22003, para. 51(m) (*rel.* June 12, 2024).

the Company's risk reduced per dollar spent metric ranking approach will prioritize their abandonment appropriately."[4]

21. But through my review of the GIS database, I was able to identify 314 segments of cast iron main on WGL's system that are "dead ends", which I define as segments of main that are only adjacent to one other segment. (There are 1,830 total such segments, counting all materials). Just one of these 314 segments is part of a WGL identified project (that is, it is part of a BCA that is listed as part of ProjectPipes 2 in FC1154, DCG 2-9, Attachment 1). One hundred (100) of these 314 segments have a cost-effectiveness of 400 or greater (as measured by risk reduced per $10,000 of estimated project cost); 214 are less cost-effective than that.

22. A dead end may consist of more than one segment; my analysis only captures the end-most segment. As a result, I am likely understating the length of pipe and number of services that are served by dead-end mains.

23. The 314 cast-iron endmost dead-end segments connect to 1,199 services, indicating an average of 3.82 services per segment. Together, the cast-iron endmost dead-end mains and associated services are 106,232 feet in length and represent a risk of 3,967,941. WGL's estimated replacement cost for all of these assets would be $108,797,609, or $90,740 per service. Replacing these assets (or only the cast iron mains and higher-risk services) would provide a risk reduction per $10,000 of less than 370, which is relatively low compared with WGL's proposed recent projects. However, retiring these assets would cost far less and be a much more cost-effective way to reduce risk. In addition, retirement fully eliminates risk both outside and inside customer premises, while replacement with plastic pipes leaves residual risk.

[4] Exh. WG (2C), at page 62, line 18, through page 63, line 7.

24. Finally, I wanted to test WGL witness Rogers' refutation of a statement in my testimony that the Customer Choice pilot program should identify services to be replaced years in advance.[5] Witness Rogers states "[m]y direct testimony specifically noted that even the current proposal locks in the list of services farther in advance than a standard safety program would do. Further, Witness Hopkins's proposal defies the boundaries of the existing District SAFE Plan. To the extent Witness Hopkins is recommending the Company can or should be directed to reach beyond a three-year planning period, the entire District SAFE Plan and the funding for it should match any expanded planning term, as these are all inextricably intertwined."[6]

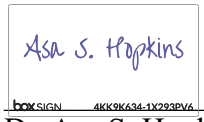
25. My analysis of high-cost-effectiveness services (risk per $10k between 1000 and 6000) connected to low-cost-effectiveness mains (mains with risk per $10k below 400) shows 3,454 such services. WGL's DC SAFE plan proposes to replace 2,612 services through its service-only replacement program over the next three years. If WGL were to replace services on a pure cost-effectiveness basis, that would still leave 842 services that are clearly targeted for replacement but fall outside the SAFE plan period. Engaging with these customers to see if they would electrify before 2028 would be a straightforward way to look past the three-year planning period.

26. In sum, through my review of WGL's GIS database and associated data responses, I observed very little evidence to support WGL's claim that its proposed pipe replacement program would, in fact, achieve the highest risk reduction per dollar spent.

[5] Exh. DCG (A), at page 9, lines 22-24.
[6] Exh. WG (2A), at page 47, lines 16-22.

I declare under penalty of perjury that the foregoing is true and correct.

Executed in Newton, MA on Aug 11, 2025



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