GOVERNMENT OF THE DISTRICT OF COLUMBIA
OFFICE OF THE ATTORNEY GENERAL

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Public Advocacy Division
Social Justice Section

E-Docketed

October 3, 2022

Public Version

Ms. Brinda Westbrook-Sedgwick, Secretary
Public Service Commission
of the District of Columbia
1325 G Street, NW, Suite 800
Washington, DC 20005

Re: Formal Case No. 1167 – In the Matter of the Implementation of Electric and Natural Gas Climate Change Proposals

Dear Ms. Westbrook-Sedgwick:

On behalf of the District of Columbia Government, please find its Consolidated Reply Comments on the Washington Gas Light Company's Climate Business Plan Filings in the above-captioned proceeding. Enclosed is the Public Version of these comments. A Confidential Version has been filed in this docket under separate cover. If you have any questions regarding this filing, please contact the undersigned.

Sincerely,

KARL A. RACINE
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BEFORE THE
PUBLIC SERVICE COMMISSION
OF THE DISTRICT OF COLUMBIA

IN THE MATTER OF	**)**	
	)	
The Implementation of Electric and Natural Gas Climate Change Proposals	**)**	**Formal Case No. 1167**

DISTRICT OF COLUMBIA GOVERNMENT'S CONSOLIDATED REPLY COMMENTS ON WASHINGTON GAS LIGHT COMPANY'S CLIMATE BUSINESS PLAN

Pursuant to Order No. 21058 of the Public Service Commission of the District of Columbia (PSC or Commission), the District of Columbia Government (DCG or the District) presents the following comments in reply to comments filed by other parties to this proceeding -- including the Office of the People's Counsel for the District of Columbia (OPC), the Apartment and Office Building Association of Metropolitan Washington (AOBA), and the Sierra Club -- on Washington Gas Light Company's (WGL or the Company) consolidated filings comprising its Climate Business Plan. These reply comments were prepared with significant assistance and analysis from the District's consultant in this matter, Synapse Energy Economics, Inc., of Cambridge, MA.

I. INTRODUCTION

The District appreciates the opportunity to provide these comments within the broader context of planning, research and regulation in support of District policy. WGL's Climate Business Plan was originally filed as part of Formal Case No. 1142.[1] In response to that earlier

[1] Filed March 16, 2020.

Climate Business Plan filing, DCG filed comments and reply comments.[2] In the interest of brevity, the District has not replicated here the arguments and analyses presented in those earlier comments. However, the District encourages the Commission and stakeholders to review those comments alongside these reply comments. In addition, due to the necessarily close relationship between electric and gas-sector climate planning, the District also refers the Commission and stakeholders to its comments and reply comments filed on the Potomac Electric Power Company's (Pepco) consolidated "Climate Solutions Plan" filings in this docket.

In these reply comments, the District responds to issues identified by other parties in their initial comments. Because many of the initial comments addressed similar issues, DCG's comments are structured based on the issues, rather than the commenters. These comments begin by addressing a set of cross-cutting and coordination issues, consistent with similar discussions in the District's comments on Pepco's Climate Solutions Plan. These comments then address WGL's proposals regarding end use equipment and efficiency. The third section addresses stakeholder comments regarding fuel supply and emissions. The final section discusses comments regarding gas infrastructure, including the implications of different climate plan proposals for future gas infrastructure investments and the recovery of costs expended for existing infrastructure which could become stranded.

[2] Formal Case No. 1142 (DCG Initial Comments filed June 26, 2020, DCG Reply Comments filed Sept. 25, 2020).

II. REPLY COMMENTS

A. Cross-cutting Issues.

1. Need for coordinated framework for WGL and Pepco.

In its initial comments on WGL's Climate Business Plan, OPC argues in favor of a coordinated and comprehensive plan for both the electric and gas systems:

> [T]he next Commission action in this proceeding must start with reconciling the contradictory and competing aspects of Pepco's and the Gas Companies' climate change plans. The utilities present two very different paths to achieving the District's climate change goals. The Gas Companies propose to keep the gas system intact and focus on efficient and cleaner potential gas technologies. By contrast, Pepco's climate plan advances near-100% electrification in the District. While Pepco's proposed plans generally align with the District's Clean Energy DC Plan and the District's draft proposed Carbon Free DC Plan, the Gas Companies' plans do not. Time and ratepayer resources will be better spent advancing one pathway to carbon neutrality to avoid wasted investment. Advancing both utilities' plans in parallel without reconciling their contradictory aspects is untenable because investments that are necessary to advance one pathway will be wasted under a different pathway.[3]

Similar to OPC, AOBA reiterates the argument it made in its comments on Pepco's climate plan filings that "[t]o protect ratepayers and the economic health of the District, a holistic and standardized process must be developed to support the Commission's concurrent evaluation of both Washington Gas and Pepco climate proposals and to chart an economically viable pathway for achievement of the District's climate objectives."[4]

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[3] Formal Case No. 1167, Office of the People's Counsel for the District of Columbia's Comments on Washington Gas and Light Company's and AltaGas' Combined Filings (CONFIDENTIAL), pg. 9 (filed, July 1, 2022), (hereafter referred to as, "OPC Comments").

[4] Formal Case No. 1167, Consolidated Comments of the Apartment and Office Building Association of Metropolitan Washington on Washington Gas Light Company's Climate Plans, pg. 4 (July 1, 2022), (hereafter referred to as, "AOBA Comments").

The District strongly agrees with OPC and AOBA on these points. As stated in DCG's reply comments on Pepco's climate plan filings,[5] the Commission should take a strong coordinating role to develop the overarching framework in which both Pepco and WGL can work to most cost-effectively meet the District's policy objectives regarding greenhouse gas emissions, equity, and economic vitality. Without a clear framework and such coordination, ratepayers could face needless and unsustainable rate increases, and the electric and gas utilities would bear uncertainty regarding recovery of the costs of their investments.

Two new cases before the Commission reinforce DCG's argument for the importance of a single overarching framework that can be used to guide utility and Commission actions. In Formal Case No. 1172, regarding the Infrastructure Investment and Jobs Act, the Commission may see filings from Pepco and WGL that reflect their application to the federal government for support to make investments for the future of the District of Columbia's energy system. If a clear framework for the energy transition were in place, the utilities and Commission would be able to easily confirm whether those proposed investments advance the District's shared vision or if resources (including cost share and the opportunity cost of staff attention) should be directed toward other purposes. The passage of the Inflation Reduction Act, with its substantial but temporary incremental funding for energy-related programs, adds urgency to develop a viable plan that will benefit from the opportunities presented by these federal legislative opportunities.

The second new case is WGL's rate case, Formal Case No. 1169. Here, the Commission is asked to rule on the utility's infrastructure investments, depreciation rates, and numerous other

[5] Formal Case No. 1167, Consolidated Reply Comments of the District of Columbia Government on the Potomac Electric Power Company's Climate Solutions Plan Filings, (Sept. 16, 2022), (hereafter referred to as, "DOEE reply comments on Pepco climate plan").

issues that would be directly and indirectly impacted by a shared framework for achieving carbon neutrality by 2045.

2. Benefit-cost analysis framework.

The District's comments on Pepco's filings in this docket include extensive discussion of the principles and role of benefit cost analysis (BCA), and the importance of a shared Commission-established BCA framework aligned with the Clean Energy Act Implementation Working Group's (CEAIWG) proposed approach. Those comments are generally applicable to BCAs in the context of WGL's filings as well.

In comments on WGL's filings in this docket, both OPC and Sierra Club support alignment on a common BCA framework, built CEAIWG's proposed approach. OPC points out the importance of a consistent BCA framework, to be established in GD-2019-04-M.[6] OPC argues that, despite clear direction from the Commission that a BCA established in GD-2019-04-M would be used for evaluating utility plans in FC 1167, WGL has not provided the data and analysis that would be required to conduct such an evaluation.

Likewise, Sierra Club argues that "it is premature for the Commission to make determinations on the utility filings as they stand today, and additional utility filings, and opportunity for comment, will be needed following the establishment of the Commission's framework."[7] Sierra Club cites Commission guidance on the principles that should be established in GD-2019-04-M for the assessment of climate plans; these elements include: (1) establishing the framework for measuring greenhouse gas (GHG) and carbon dioxide (CO_2) equivalents; (2) setting the framework for the BCA of utility climate change projects; and (3) establishing

[6] OPC Comments, pgs. 8-9.

[7] Formal Case No. 1167, Sierra Club's Comments Regarding Washington Gas Light Company's Climate Change Proposal, pg. 8 (July 1, 2022) (hereafter referred to as, "Sierra Club Comments").

reporting requirements for GHG reductions and performance. Sierra Club noted that "WGL's current filings lack much of the data and analysis that the stakeholders have recommended in the CEAIWG Report" including, for example, values for the social cost of carbon. Sierra Club concludes that, "[t]here are many examples of critical, unresolved issues that need to be addressed before the Commission can move forward with the proposals in this docket."[8]

As stated in comments on Pepco's climate plans, the District agrees with OPC and Sierra Club that the Commission should establish a common benefit-cost framework as soon as practicable, in order to use that framework to evaluate WGL and Pepco's proposals. A benefit-cost framework is a necessary accompaniment to, and not a substitute for, the overall carbon neutrality framework discussed in the previous section.

DCG also agrees with OPC and Sierra Club that WGL has not provided the information necessary for evaluating its proposals using the CEAIWG's proposed framework.[9] For example, WGL has not provided information regarding the upstream (out of District of Columbia) emissions associated with its proposed pathway; the inconsistencies inherent in this approach are discussed below. The WGL BCA also does not assume any costs for carbon emissions from fossil or alternative gases. WGL has also failed to include the costs of gas system investments such as *projectPIPES*, which would differ between the scenarios it considered. As noted in AOBA's comments on Pepco's climate plan, "just the replacement of Washington Gas's existing cast iron mains in the District will require an investment of more than $3.3 billion," equivalent to more than 500 percent of WGL's DC rate base at the end of calendar year 2021. This omission leads to understating the benefits of electrification, and conversely the costs of replacing pipe in

[8] Sierra Club Comments, pg. 9.
[9] See OPC Comments, page 9.

order to serve current customers.[10] WGL has also provided information that is inconsistent with the CEAIWG's proposed framework.

3. Stakeholder engagement and equity.

In its initial comments on WGL's plans, OPC argues that WGL should lay out a plan for considering and incorporating stakeholder input. OPC's witness Elizabeth Stanton states: "WGL fails to provide sufficient details regarding transparent stakeholder processes that would include a broad spectrum of utility customers in climate measure planning."[11] The District agrees, and further finds that WGL's plan fails to meet its obligation to engage with customers and understand their needs and desires regarding the service provided to them by WGL's systems.

Ms. Stanton also argues that the plan should include an equitable distribution of benefits and costs.[12] Further, she criticizes WGL for failing to provide an assessment of the needs of vulnerable populations, other than low-income customers who might benefit from end-use efficiency programs. She also indicates that WGL fails to identify its strategy for reaching the low-income segment.[13] The District agrees on both counts.

Similarly, AOBA states that the Commission must ensure climate transition in an affordable manner with equitable sharing of project costs and benefits.[14] However, WGL has not provided information on that distribution. Such an analysis is fundamental and necessary for assessing the plan's consistency with policy and Commission objectives.[15]

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[10] See DOEE reply comments on Pepco climate plan.

[11] Affidavit of Elizabeth A. Stanton, PhD on Behalf of the Office of the People's Counsel for the District of Columbia, Formal Case No. 1167, p. 12. Hereafter referred to as, "Stanton Affidavit."

[12] Stanton Affidavit, p. 10-16.

[13] Stanton Affidavit, p. 13-14.

[14] AOBA Comments, p. 17-18.

[15] Formal Case No. 1130, Order No. 19275 p. A-2.

B. End Use and Efficiency: Energy efficiency programs.

In its Climate Change Action Roadmap (CCAR), WGL names "end-use and efficiency" as one of the four key program areas or strategies to reduce GHG emissions and help achieve the District's 2045 climate goals. WGL then explains what kind of energy efficiency and demand response technologies and programs WGL intends to promote. WGL presents several specific initiative areas for Use Case 1 in the CCAR.[16] However, WGL provides little information about how it plans to coordinate with the DC Sustainable Energy Utility (DCSEU) in delivering energy efficiency and demand response. WGL needs to carefully develop and design its energy efficiency programs in collaboration with the DCSEU.

In the District of Columbia, energy efficiency services are provided by the DCSEU. The DCSEU receives funding from ratepayers of Pepco and WGL, as well as from a few other sources. On the other hand, the Clean Energy DC Omnibus Amendment Act of 2018 allowed for utilities to establish energy efficiency and demand response programs, provided that such programs do not impede the existing energy efficiency programs currently offered by the DCSEU and other entities. As indicated in the CCAR, WGL is planning to propose specific initiatives through the FC1160 process. Given DCSEU's long history of program implementation, it is important to understand the role and scope of the DCSEU's programs in order to identify how WGL can help provide energy efficiency programs in the District of Columbia without adding complexity, customer confusion, or program conflict.

[16] Formal Case No. 1167, WGL's Climate Change Action Program – Part 1, Pg. 37 (Dec. 15, 2021).

The DCSEU is tasked with helping residents and businesses in the District of Columbia reduce energy consumption, energy bills, and the associated emissions. The DCSEU promotes a comprehensive set of energy efficiency measures through more than 20 programs for residential, low-income and commercial customer segments. These programs save both electricity and natural gas, and they promote renewable energy. The current annual gas savings are about 2.2 million therms, equivalent to 0.72 percent of gas sales.[17]

Given the depth and breadth of the DCSEU's existing energy efficiency programs, it will be critical for WGL to work very closely with the DCSEU to design and implement any new energy efficiency programs. At minimum, WGL should abide by the core principles on program coordination that WGL, Pepco and the DCSEU developed and agreed on as part of the working group process in FC1160. Among others, the following two principles are most relevant in the actual process of developing new utility-run programs:

- Coordinated program administration should minimize customer and contractor confusion whenever possible. The District should leverage existing customer relationships, energy efficiency programs, and trade ally networks and other existing resources to avoid market confusion, avoid duplication, and take energy efficiency and demand response to scale. Energy efficiency and demand response initiatives should also seek opportunities to scale up existing successful program offerings that may have been constrained by budgets, access to data, or other factors, to bring greater energy savings to more customers . . .

- Pepco, WGL and the DCSEU will approach program design in a collaborative manner in order to maximize benefits to District energy users and markets. There is potential—and the law allows, with the DCSEU's consent—for Pepco or WGL to offer programs that enhance the existing DCSEU programs in a given market. Developing programs to complement existing efforts in a single market requires greater cooperation in both design and implementation.[18]

[17] Sustainable Energy Utility Advisory Board, Fiscal Year 2020 Annual Report.

[18] Formal Case No. 1160, Energy Efficiency and Demand Response (EEDR) Metrics Working Group Report, pgs. 5-6 (April 27, 2021).

In FC1160, Pepco already filed its own EEDR programs. Based on the above-mentioned program coordination principles, the District finds that almost every program proposed by Pepco will give rise to customer confusion and has clear or potential program overlap with some of the existing programs offered by the DCSEU.[19] The District expects similar overlap and customer confusion issues with the program proposal WGL is planning to develop.

Optimal solutions for addressing program overlap and customer confusion issues differ by type of program. However, at a high level, we recommend that WGL design its programs or program delivery in the following manner:

- **Program proposal that has no overlap issues in terms of measure types or target customer segments**: WGL could develop and deliver its own program, in consultation with the DCSEU. However, such a program could still create customer confusion, especially among customers who own multiple properties or contractors who work on projects for different customer segments. Thus, WGL should still consider either branding its services in a manner coordinated with the DCSEU program or tasking the DCSEU with delivering new services on behalf of WGL. In addition, WGL should also consider working with the DCSEU to leverage the DCSEU's existing marketing platform and customer database.

- **Program proposal that has significant overlap issues in terms of target customer segments and measure types**: WGL should contribute additional funding to the DCSEU and entrust the DCSEU to expand and deliver its energy efficiency program on behalf of WGL.

- **Program proposal that has some overlap issues in terms of customer segments or measure types**: Even in this situation, we still recommend that WGL entrust the DCSEU to expand and deliver its energy efficiency program on behalf of WGL. However, if WGL still wishes to develop and deliver its own program, WGL and the DCSEU need to develop protocols that ensure that customers only receive incentives from one entity and that WGL and the DCSEU do not double count savings. This could include an approach where WGL eliminates all measures in its proposed program that are already supported by the DCSEU. We further recommend that WGL should consider coordinating branding for its services with the DCSEU program to avoid any customer confusion.

[19] Formal Case No. 1160, District of Columbia Government's Consolidated Initial Comments on the Potomac Electric Power Company's Climate Solutions Plan Filings (June 17, 2022).

C. Fuel Supply and Emissions.

1. Lifecyle emissions accounting.

OPC argues that WGL's accounting for GHG emissions is inconsistent in its treatment of emissions that occur outside of the District of Columbia. OPC points out that WGL counts actions that occur outside the District of Columbia and reduce emissions outside the District of Columbia as emission reductions toward its target, even though those actions would have no effect on the District's GHG inventory under current methods.[20] Dr. Stanton, OPC's expert consultant, points out that "[b]oth WGL and Pepco should include upstream emissions in their accounting. If WGL fails to include upstream emissions in its accounting, it cannot possibly justify counting reductions in upstream emissions in its accounting."[21]

The District agrees with OPC and Dr. Stanton that in order for upstream emission reductions to be considered as part of a utility plan to reduce emissions in line with District policy, the inventory must include all upstream emissions. In fact, the Department of Energy and Environment (DOEE) is in the process of updating the District's GHG inventory methodology to account for upstream emissions. This inventory will account for upstream emissions in 2006, in order to measure achievement of the levels required by the Climate Commitment Amendment Act of 2022 (e.g., 45 percent below 2006 levels by 2025). Correctly accounting for upstream emissions from fuel use, among other lifecycle emissions accounting updates, will provide a better estimate of the amount of greenhouse gas emitted as a result of the actions of the residents and businesses in the District of Columbia. DOEE intends to publish at least two inventories (one using the traditional methodology, and one using a lifecycle method) during a transition period,

[20] OPC Comments, pg. 15.
[21] Affidavit of OPC expert Stanton, ¶ 70.

and also plans to develop a consumption-based inventory to provide additional information for residents and policymakers.

Including upstream emissions in the District's inventory is consistent with the CEAIWG's majority recommendations for emissions factors to use in a BCA. The CEAIWG recommended that "[u]pstream emissions of GHGs covered by A.1.1 should be included in the calculation of emissions factors for all utility generation and supply. For example, fugitive methane emissions should be included for natural gas supply and electricity generation using natural gas."[22] It further recommended that "[t]he upstream methane emissions attributable to each unit of natural gas delivered to the District of Columbia should be determined proportionate to the total emissions from the natural gas supply chain to the District of Columbia. The same method should be applied to the share of electricity delivered to DC that is derived from gas-fired generation."[23]

Taking a lifecycle approach to emissions accounting would mean that WGL's proposed remote actions to reduce emissions could, to the extent they are verified, be counted toward meeting the District's GHG reduction requirements. However, these actions would generally only offset a portion of the additional emissions that would now be included from upstream methane production and transportation. As a result, dependence on "low-carbon" gases to supply the building sector's emission reductions might result in either not achieving the District's overall emission reduction objectives, or paying more to do so because of the need to eliminate additional emissions in other sectors or procure negative emissions from uncertain and expensive sources (such as direct air capture).

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[22] GD-2019-04-M, CEAIWG Framework for Compliance with the Clean Energy Omnibus Act of 2018 of the District of Columbia, pg. 222 (Nov. 16, 2021).

[23] *Id*., pg. 224.

2. Lack of detail on procurement.

a. Certified Gas.

Sierra Club's and OPC's witnesses both point out that WGL has failed to provide sufficient detail on its plans with respect to certified gas. Dr. Stanton notes the many unanswered questions about the sourcing, safety, and role of certified gas and other fuels in the climate plan. These include: "From what entities will WGL secure alternative fuels (certified gas, RNG, and hydrogen), using what delivery methods and pathways, and at what cost to consumers? What are the upstream emission impacts of these specific fuels from these specific sources? What are the customer cost and safety risks of these relatively un-tried fuels?"[24]

Regarding plans for procurement, Mr. Walker points to the lack of data behind WGL's cost and availability estimates for certified gas. He indicates that, "[w]hen asked to provide the source data for the costs of certified gas it plans to deliver, the Company responded that the incremental cost of Certified Gas was only based on AGF's consultant ICF's 'discussions with industry participants' and an assumption that it would grow in cost over time."[25] Further, WGL has only indicated one supplier (Chesapeake Energy Corporation), which would supply just 5 percent of WGL's planned need for certified gas.[26]

With respect to the emissions impacts of certified gas, WGL claims that its certified gas contract with Chesapeake Energy Corporation has a demonstrated GHG reduction benefit of 5.01 kg/cCO2e/MMBtu.[27] Even if we assume that this claim is accurate and that these emissions reductions are additional (beyond what would have occurred based on current extraction and

[24] OPC Comments, Stanton Affidavit, p. 11.
[25] Sierra Club Comments, Walker Affidavit, p. 29.
[26] *Id.*
[27] F.C. 1160, WGL Climate Change Action Program, pg. 56.

transport practices), there is uncertainty about the level of emissions reductions associated with future, unknown contracts. Specifying product requirements might provide some limited assurance about the emissions reductions associated with the certified gas WGL will seek; however, WGL's filing did not provide detail on what requirements it will use for procurement of certified gas. Similarly, WGL could have specified who will certify the gas, but even then we might not have clarity on emissions reductions; Mr. Walker states, "There is no single certifier of gas and the emissions accounting methods that each takes to certifying its gas may vary and can be opaque."[28] Since WGL has not set requirements for certified gas or specified the certifying entity, the GHG emission reductions associated with the certified gas are speculative at best. Given these facts, a climate strategy based on certified gas is highly problematic and risky.[29]

Even assuming that WGL is able to procure cost-competitive certified gas and that the emissions reductions from this commodity align with WGL's expectations, certified gas' contribution to the climate strategy would be very limited. Dr. Stanton notes that, by WGL's own estimate, certified gas will only provide a *4 percent reduction in emissions by 2032*.[30] The District agrees with other commenters that WGL's lack of detail and optimistic assumptions about procurement and attributes of certified gas do not provide the support needed to justify inclusion of this product within DC's climate strategy.

[28] Sierra Club's Comments, Walker Affidavit, p. 29.

[29] We also note that regulations currently being considered by the Environmental Protection Agency (EPA) to reduce air emissions from equipment and activities used for the onshore oil and gas industry could make WGL's plan moot; if EPA promulgates this regulation, any claimed benefits of certified gas will be reduced or eliminated.

[30] OPC Comments, Stanton Affidavit, p. 18.

b. Renewable Natural Gas (RNG)

Both OPC and Sierra Club point out that WGL's assumptions and plans procuring RNG are lacking. The District agrees. As with certified gas, Dr. Stanton indicates that WGL's procurement plans for RNG are not clear.[31] While WGL's 30-year plan assumes that 41 percent of throughput is RNG in 2050, WGL does not specify sources and provides no details on risks and costs associated with related pipeline upgrades.[32] Likewise, Sierra Club notes that WGL's procurement plans are vague. In particular, Sierra Club points out the lack of information provided by WGL regarding RNG availability and methane capture.[33]

On behalf of Sierra Club, Mr. Walker analyzes the availability of RNG for the entire south Atlantic region. He finds that WGL's assumptions about RNG supply are [redacted][34] Supplies of low-carbon gas are currently limited and are likely to remain so far into the future. In addition, the demand for RNG is likely to be high as other states decarbonize their economies. Other states in the region, including Maryland, are taking steps to reduce emissions from their buildings, transportation, and industrial sectors. Such policies may push up the price of RNG for all.

3. Hydrogen.

Hydrogen can be produced in a number of ways. Hydrogen obtained from electrolysis can reduce GHG emissions on a lifecycle basis if renewable energy is used to power these

[31] OPC Comments, Stanton Affidavit, p. 11.
[32] *Id.* pgs. 17-21.
[33] Sierra Club Comments, p. 19-23.
[34] Sierra Club Comments, Walker Affidavit, p. 7-13.

processes and leakage is limited. Hydrogen produced this way is called green hydrogen.

Hydrogen can also be produced from biomass gasification, steam reforming process of methane, and coal, but the emissions from these processes are generally higher to much higher than for direct combustion of fossil gas. The efficiency of hydrogen production processes generally ranges from 35 to 75 percent.[35]

WGL describes hydrogen as "clean."[36] Presumably WGL's intent with this label is to distinguish the hydrogen that WGL intends to deploy—including but not limited to green hydrogen—from hydrogen produced from methods that result in large amounts of GHG emissions, such as hydrogen production from coal. As explained by Sierra Club, however, hydrogen emissions have much higher global warming potential than CO2. Leakage risk is significant, due to hydrogen's small molecular size; leakage rates are 1.3–2.8 times greater than those for methane.[37]

Green hydrogen is not currently cost competitive.[38] Also, the process for producing green and other types of hydrogen requires large amounts of electricity. As noted by Sierra Club, "[g]iven the Districts [sic] limited energy generation profile, it is very unlikely that DC is capable of generating meaningful quantities of 'green' hydrogen, which means it would need to be imported, requiring new pipelines or blending into the interstate gas pipeline system."[39] The District shares the concerns raised by Sierra Club. The alternative uses and opportunity costs of the electricity consumed in hydrogen production should be considered in this climate planning

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[35] Hydrogen Production Technologies Overview, El-Shafie, M. , Kambara, S. and Hayakawa, Y., Journal of Power and Energy Engineering, 7, 107-154 (2019).

[36] WGL, Climate Action Plan Part 2, p. 42.

[37] Sierra Club comments, p. 44.

[38] How green is blue hydrogen? Howarth, R., Jacobson, M. 2021. Energy Science & Engineering: 12. Available at: https://onlinelibrary.wiley.com/doi/full/10.1002/ese3.956

[39] Sierra Club comments, p. 33.

process. Further, the District finds that it is preferable to devote hydrogen to the end uses that are hardest or most expensive to electrify, such as heavy-duty transportation and industrial processes, rather than the relatively easy-to-electrify end uses in buildings.

Throughout its plan, WGL makes emphasizes the safety, reliability, and affordability of its current infrastructure and of its preferred plan. Citing electric outages in Texas, New Jersey, and California, WGL suggests that widespread electrification will negatively impact reliability and resiliency, unless there are capacity expansions that are equally if not more secure from a system resiliency perspective relative to the gas and electric system combined.[40] One the of primary concerns that WGL appears to be raising is related to safety: for example, reliability of the electric system is important for operation of heating equipment to keep homes warm in the winter. However, there are several problems with this line of reasoning. First, many types of gas combustion end-use equipment require electricity to run, e.g. modern gas furnaces. During an electricity outage, this gas combustion equipment is not more reliable than equipment that runs exclusively on electricity, such as heat pumps. Second, as noted by Dr. Stanton, the events in Texas and California do not appear to be related to either electrification or the absence of a back-up gas-based energy delivery system, and hence the comparison is inappropriate. Third, WGL's claims fail to recognize the safety issues that currently exist on its system, and those that are likely arise from its planned use of alternative gases in new applications. Regarding the safety of the existing system, OPC plainly states:

> As consistently documented in proceedings involving WGL's putative leak-abatement activities, hazardous leaks on the natural gas system servicing the District have continued to rise and are otherwise unacceptably high despite considerable spending to address this dangerous problem. Now, here in its climate plan, WGL proposes reducing the leaks

[40] F.C. 1167, WGL's Climate Action Plan Part 2, pg. 17 (Jan. 18, 2022).

> from the system as one of four key pillars of its proposed approach to decarbonizing the District's energy systems. Yet, unless current programs improve WGL's leak remediation performance and outcomes, WGL's track record gives OPC little reassurance that hinging the District's climate change strategies on WGL-administered leak reduction programs will achieve the District's important climate change goals. If the Commission decides to seriously explore the pathways to decarbonization proposed by WGL, it should first ensure that WGL can correct whatever challenges are hindering its ability to cost-effectively implement leak abatement programs.[41]

Regarding its proposal to use alternative fuels like hydrogen, WGL appears to be brushing risks, including leakage and explosion risk, under the rug. OPC's witness argues that "WGL does not sufficiently address preparations for potential safety issues arising from hydrogen use: explosions or 'unplanned ignition' at higher concentrations of hydrogen from equipment that is not upgraded, the lack of hydrogen safety codes, and the embrittlement of pipes leading to catastrophic breaks."[42]

The literature has generally held that hydrogen can be safely mixed with methane up to 20 percent by volume, or 7 percent in terms of heat content. At higher concentrations, hydrogen poses safety, cost, and feasibility concerns for distribution within the existing pipeline network, as hydrogen causes metal to become brittle. Also hydrogen is not visible when it burns and it requires special end-use equipment, incurring additional cost for customers.[43] However, the limits for safely blending hydrogen into the gas stream may be lower than previously assumed: a recent study conducted for the State of California found that mixes of up to just 5 percent

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[41] OPC Comments, p. 11.

[42] OPC Comments, Stanton Affidavit, p. 21.

[43] *Blending Hydrogen into Natural Gas Pipeline Networks: A Review of Key Issues*, Melaina, M., Antonia, O., Penev, M. 2013. National Renewable Energy Laboratory Technical Report NREL/TP-5600-51995. Available at: https://www.nrel.gov/docs/fy13osti/51995.pdf

hydrogen by volume is safe.[44] This sheds additional doubt on the cost and feasibility of WGL's plan.

D. Gas Infrastructure and Stranded Assets.

OPC expert Stanton[45] and Sierra Club expert Walker[46] note in their comments that WGL unreasonably assumes the same level of infrastructure investment in each of scenario in its Climate Business Plan. Accordingly, the utility does not discuss its pipeline replacement program, *projectPIPES*, within any of these scenarios. Because each of WGL's four scenarios involves a different level of net customer additions, alternative gaseous fuel (AGF) adoption, and electrification, its infrastructure needs in each scenario would vary. Moreover, by not modeling this variation in infrastructure investment, WGL does not fully account for the financial implications of all scenarios.

More specifically, if customers are departing the gas system, as is the case in WGL's "full electrification" scenario, then the utility would be able to scale back its infrastructure. Furthermore, WGL would be able to retire some portion of mains and services throughout its system as customers leave to electrify, as that infrastructure is no longer in use. The miles of mains that could be retired would largely depend on whether the electrification is more clustered or more scattershot. In the first case, more miles of mains could be retired, as entire neighborhoods electrify and no longer rely on the gas system. In the second case, fewer mains could be retired, as the neighbors of an all-electric building might still rely on the gas main for

[44] 2022. Hydrogen Blending Impacts Study Final Report. Penchev, M., T. Lim, M. Todd, O. Lever, E. Lever, S. Mathaudhu, A. Martinez-Morales, and A.S.K. Raju. Agreement Number:19NS1662. California Public Utilities Commission. Available at: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M493/K760/493760600.PDF

[45] OPC Comments, Stanton Affidavit, p. 38.

[46] Sierra Club Comments, Walker Affidavit, p. 32.

their buildings. Even so, the exact level of infrastructure investment would not be the same as the current day infrastructure, and different planning frameworks would result in different costs.

To better understand the impact of WGL continuing to invest in its infrastructure at current rates, Synapse modeled WGL's Fuel-Neutral Decarbonization scenario in its Gas Rate Model (GRM) on behalf of the District.[47]

1. Fuel-Neutral Decarbonization Scenario

In the first scenario that Synapse modeled using the GRM, they based their inputs on WGL's "Fuel-Neutral Decarbonization" scenario and as such, used the same name for the GRM scenario. Accordingly, Synapse used WGL's projection for total number of customers,[48] total gas sales[49] (broken out into fossil gas, renewable natural gas or RNG, synthetic natural gas or SNG, and hydrogen),[50] and gas prices[51] (the weighted average of the fossil gas price and the marginal AGF price). Figure 1, Figure 2, and Figure 3 show the full projection of number of customers, total gas sales, and fuel mix used in the modeling. Also note that the inputs and results are only presented through 2040. In the Fuel-Neutral Decarbonization scenario, as well as the subsequent two scenarios to be discussed below, the gas system in 2040 is expected to be different enough from the system we have today that the model cannot fully capture all of the impacts of these

[47] The GRM projects gas utility rates based on different scenarios for utility investment, sales, and financial models. Synapse uses input data from annual utility reports to state and federal regulators, alongside data from the Pipeline and Hazardous Materials Safety Administration (for gas pipeline investment data) and rate cases (such as depreciation and cost-of-service studies) to build a model of the past up to the present. The model tracks utility plant in service, depreciation, capital additions and retirements, operations and maintenance, and income taxes. It accounts for capital structure and changes in tax rates. Looking forward, the model allows Synapse to test scenarios for different levels of investment and customer growth or decline, pipeline replacement programs, early retirements, stranded costs, and changes in depreciation rates. Synapse maps changes in customer numbers to changes in miles of pipeline in service and other aspects of capital plant.

[48] F.C. 1167 WGL Confidential file "Spreadsheet_2 WGL Meter and Demand Forecast.xlsx" (Sept. 1, 2021)

[49] F.C. 1167 WGL Confidential file "Spreadsheet_9 WGL Gas Supply Portfolios and Costs.xlsx" (Sept. 1, 2021)

[50] RNG, SNG, and hydrogen together will be called "Alternative Gaseous Fuels" or "AGFs."

[51] F.C. 1167 Confidential file "Spreadsheet_9 WGL Gas Supply Portfolios and Costs.xlsx" (Sept. 1, 2021)

changes. That is, there are additional customer decisions and feedback loops that would come into play in later years that are not fully captured in the model. Nonetheless, the results presented below adequately represent the scale of the impact of the Fuel-Neutral Decarbonization scenario, as well as the following two scenarios, discussed below. [redacted]

Figure 1. Number of Customers

[redacted]

Figure 2. Total Gas Sales

[redacted]

Figure 3. Fuel Mix

Synapse models capital additions related to distribution system mains, services, meters, meter installations, and house regulators based on net customer additions, pipeline retirement approach, and historical pipeline data (including the miles of pipe by pipe material and the miles of pipe by decade installed). All other capital addition line items increase annually with inflation. Synapse models operations and maintenance expenses based on the total number of customers, the miles of pipeline in the system, and the number of services in the system for each projected year.

Synapse assumed an inflation rate of 2 percent per year and an after-tax return on equity (ROE) of 7 percent.[52] Remaining potential variables, including depreciation rates, cost of debt, debt fraction of capital, and income tax rates were held constant at their 2020 values.

[52] This ROE is intended to be a long-term average, reflecting that the utility's earned return tends to rift below its allowed return and then be reset following rate cases.

In the Fuel-Neutral Decarbonization scenario, Synapse found that the increased use of AGFs in WGL's system, in addition to the decreasing gas demand per customer, leads to rapidly increasing rates. Due to these factors, both residential and C&I rates are projected to more than double between 2020 and 2040, as seen in Figure 4 and Figure 5, in inflation-adjusted dollars.

Figure 4. Residential Revenue per Dekatherm, Fuel-Neutral Decarbonization Scenario

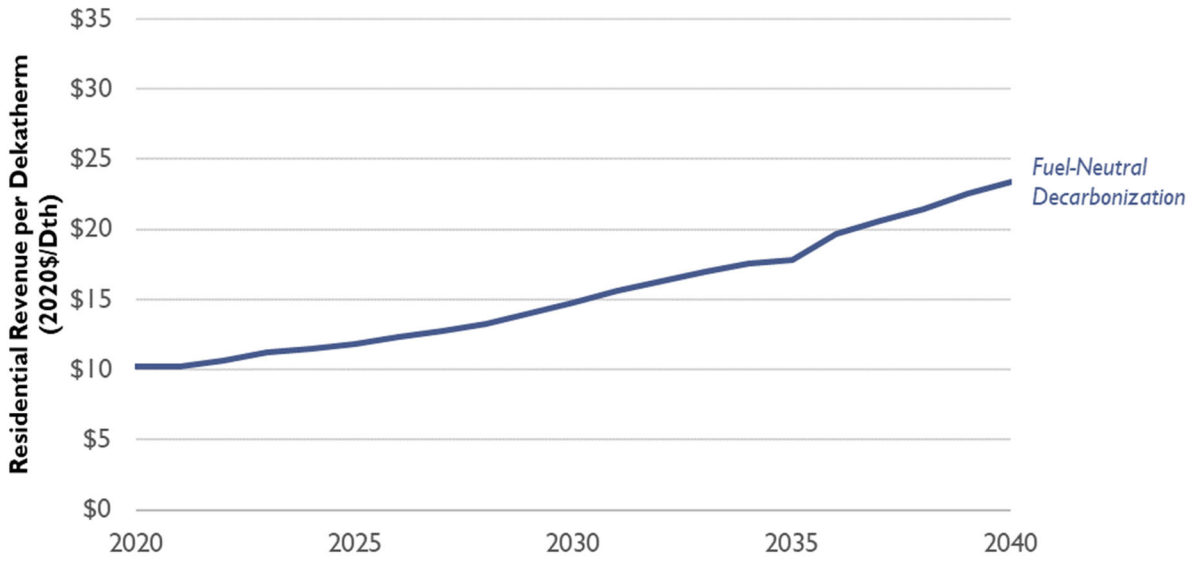
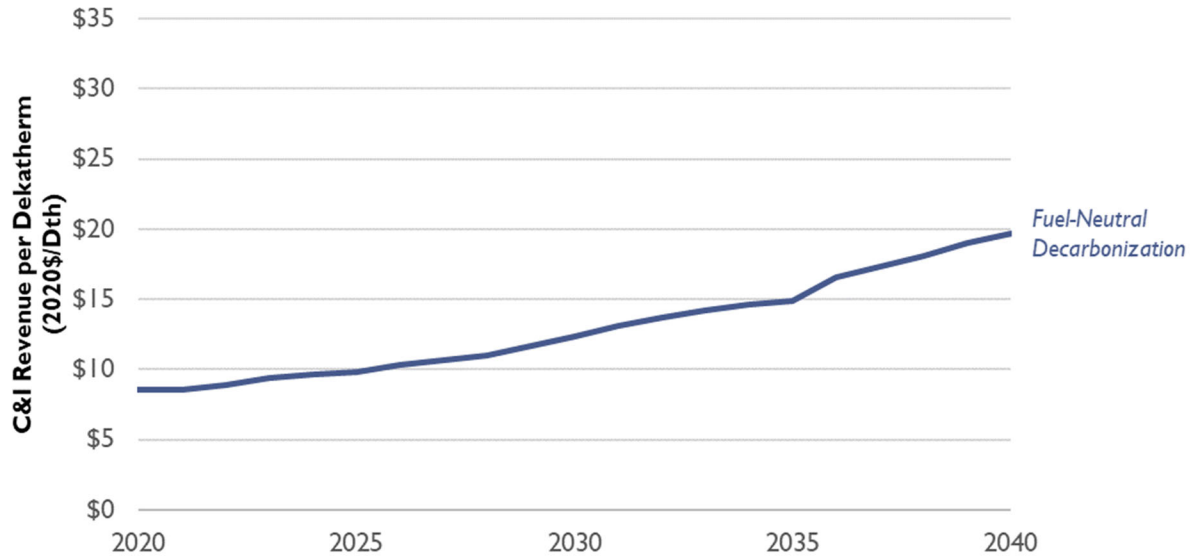
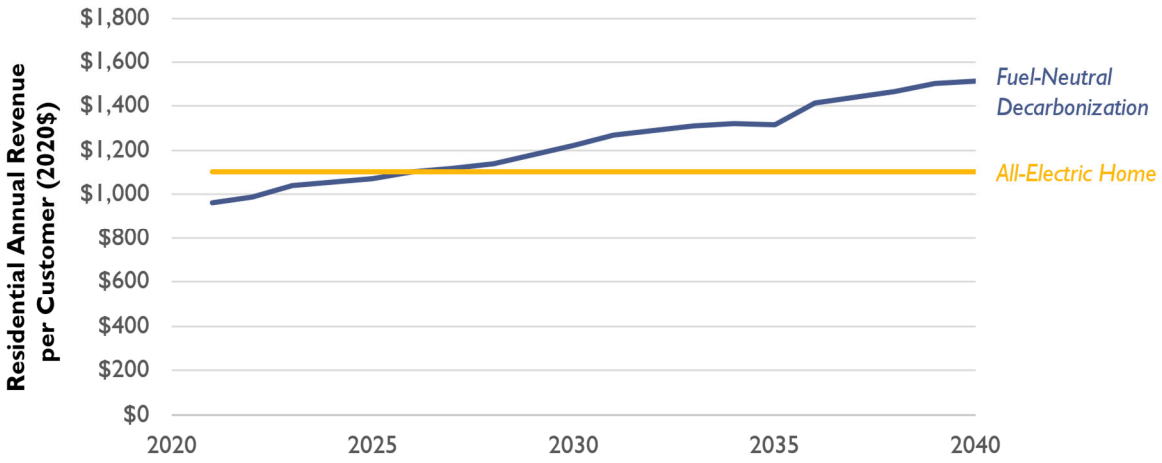


Figure 5. C&I Revenue per Dekatherm, Fuel-Neutral Decarbonization Scenario



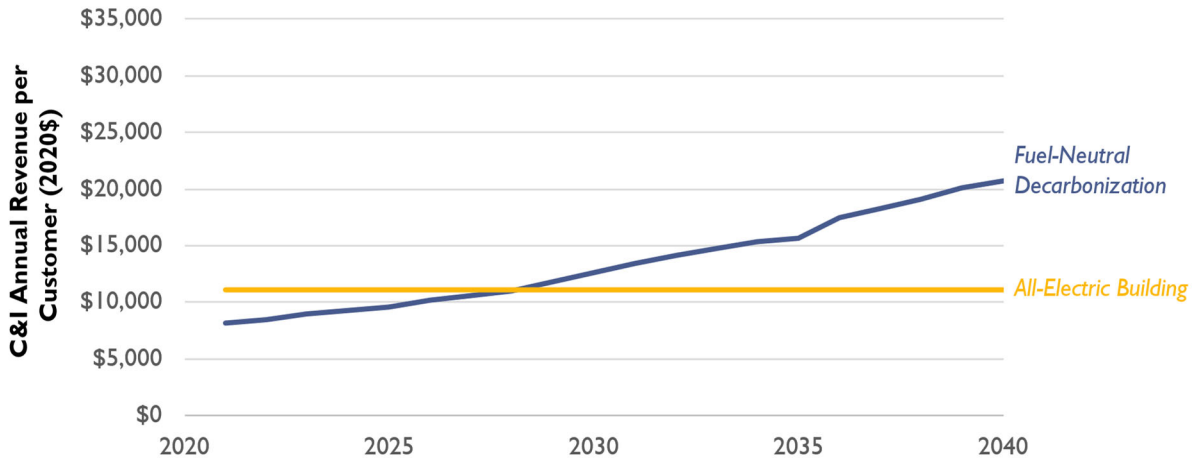
Similarly, the increase in rates corresponds to an increase in the annual costs to operate a building on the gas system. As seen in Figure 6 and Figure 7, the gas costs to operate a gas building significantly increase from 2020 to 2040. For a simple comparison, Synapse estimated the electric bill increase for customers instead using electricity for all gas end uses using 2021 average rates of about $0.13 per kilowatt-hour.[53] Electric bills would increase by about $1,100 for an average residential customer and $11,000 for an average commercial customer. Figure 6 and Figure 7 show this level for comparison, fixed in inflation-adjusted terms.

Figure 6. Residential Annual Revenue per Customer, Fuel-Neutral Decarbonization Scenario



[53] United States Energy Information Administration. 2022. *Electricity Data Browser*. Available at: https://www.eia.gov/electricity/data/browser/#/topic/7?agg=0,1&geo=0000002&endsec=vg&linechart=~ELEC.PRICE.DC-RES.A~ELEC.PRICE.DC-COM.A&columnchart=ELEC.PRICE.DC-ALL.A&map=ELEC.PRICE.DC-ALL.A&freq=A&start=2001&end=2021&ctype=linechart&ltype=pin&rtype=s&maptype=0&rse=0&pin=

Figure 7. C&I Annual revenue per Customer, Fuel-Neutral Decarbonization Scenario



The Fuel-Neutral Decarbonization scenario becomes more expensive than the all-electric building scenario in the mid-2020s in the residential sector and the late 2020s in the C&I sectors. Additionally, assuming that trends in increasing gas costs and decreasing electric costs continue past 2040, as seen in the figures above, the cost difference in operating a gas building versus an all-electric home will continue to diverge. As gas rates rise, it is reasonable to expect increasing numbers of customers will electrify their homes to achieve bill savings.

Moreover, the assumptions used to determine the building operating costs in the gas building and the all-electric building are conservative, such that more mid-range projections would further increase the cost of operating a gas building and decrease the cost of operating an electric building.

On the gas side, WGL uses a low-end estimate for AGF prices in its Fuel-Neutral Decarbonization scenario. Specifically, WGL assumes that AGF prices will range from $10 to $25 per dekatherm between 2020 and 2040 (in 2020 dollars).[54] However, in a Maryland based

[54] WGL Workpapers, pg. 13.

study, Energy and Environmental Economics (E3) estimated that AGFs would optimistically cost around $30 per dekatherm (in 2020 dollars).[55] On the conservative side, E3 projected that these fuel types could cost up to $70 per dekatherm (in 2020 dollars). Considering the similarities between Maryland and DC, both in terms of location and utility operations, WGL's cost estimate for AGFs is notably low. If the costs of AGFs are higher than WGL projects, the cost to operate a gas building will similarly increase.

On the electric side, incremental customer bills for electrification loads are more likely to decrease, in real terms, than to increase. Various factors, including electric utility investment plans, improving building shells and equipment efficiency, supply costs, and sales volumes will variously increase or decrease electric rates. Based on EIA data, inflation-adjusted average all-in rates declined in the District of Columbia over the last decade, despite changes in these factors. In general, electrification should produce downward pressure on electric rates for delivery service in the coming decades due to increased utilization of the electric system, which will reduce costs per unit. If so, the actual costs of operating an all-electric building could be lower than presented in Figure 6 and Figure 7.

Altogether, WGL's preferred Fuel Neutral Decarbonization scenario will lead to increasing customer costs, and divergence relative to readily available alternatives. As a result, customers will choose to leave the gas system in order to decrease their utility bills. As these customers depart, the costs for the customers remaining on the system will further increase, creating a cycle of customer departures and spiking costs.

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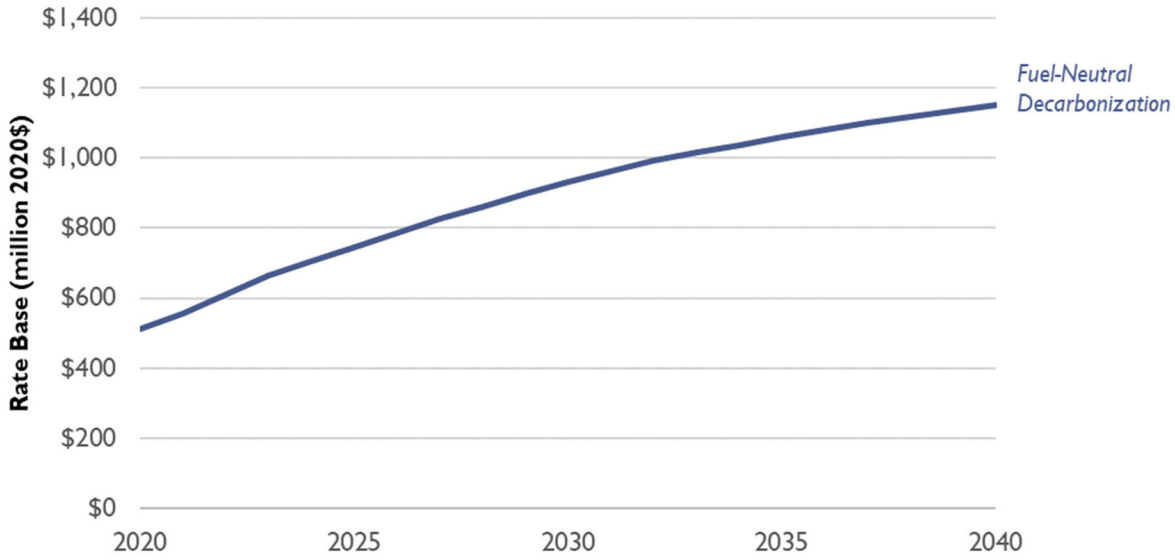
[55] *Maryland Building Decarbonization Study: Final Report*. Presentation by Energy and Environmental Economics Clark, T., D. Aas, C. Li, J. de Villier, M. Levine, and J. Landsman. October 20, 2021. Available at: https://mde.maryland.gov/programs/Air/ClimateChange/MCCC/Documents/MWG_Buildings%20Ad%20Hoc%20Group/E3%20Maryland%20Building%20Decarbonization%20Study%20-%20Final%20Report.pdf.

As customers increasingly leave the gas system, beyond WGL's expectations, the assets remaining on the system will be at risk of stranding. As noted in AOBA's comments, electrification increases ratepayer bills and the potential for stranded assets.[56] OPC's expert Ms. Stanton also notes that WGL fails to account for this risk of stranded assets in its scenarios.[57] This is a critical omission. By continuing to invest in infrastructure over the next 20 to 30 years, WGL more than doubles its rate base in real terms, as seen in Figure 8.

Figure 8. Rate Base, Fuel-Neutral Decarbonization



The dramatic increase in WGL's rate base leaves a high value of assets at risk of stranding, exacerbated by customer departures due to electrification. Thus, WGL is at a high risk for significant stranded assets over the next 20 years. The Commission has an obligation to consider the financial health of the utilities under its purview and to mitigate the associated

[56] AOBA Comments, p. 8-9.
[57] Stanton Affidavit, p. 41.

public risk. The Commission should therefore take these results seriously and develop a comprehensive framework that includes plans for business transformation for the gas utility.

WGL's Climate Business Plan includes a policy resolution that would shift costs from gas to electric customers. In doing so, WGL implicitly acknowledges that the current cost trajectory for the gas system is too high for many consumers. This further implies that customers would choose to depart the gas system without the additional revenue from electric customers. Thus, by acknowledging the need for assistance in keeping gas costs down, WGL also acknowledges that the future of the gas system is not sustainable as is and changes need to be made to protect customers.

2. Non-Adaptive Electrification Scenario.

As discussed above, and in light of the District's current position of supporting electrification, customer departures will most likely be higher than WGL projects. To better reflect the actual level of customer departures under WGL's fuel neutral decarbonization scenario, Synapse ran a second scenario, "Non-Adaptive Electrification." This scenario is designed to capture the impacts of increased customer departures from the gas system, while WGL continues to plan for a path similar to its Fuel-Neutral Decarbonization scenario. Specifically, this scenario includes a decreasing number of customers and gas throughput, without WGL adapting to these changes by decreasing infrastructure investments.

Most of the inputs into Synapse's GRM are the same as the Fuel-Neutral Decarbonization scenario inputs, except for the total number of customers and the volume of gas throughput. Synapse used WGL's Full Electrification scenario as a proxy to determine the number of customer departures and the volume of gas sales under increased electrification in the District of Columbia. Figure 9 and Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

Figure 10, below, show numbers of customer and volume of gas throughput. While WGL did not develop the Full Electrification case to reflect this scenario, the assumptions for customers and sales are not inconsistent with customer departures associated with the changing economics of gas and electric service shown above for the Fuel Neutral Decarbonization case.

[redacted]

Figure 9. Number of Customers, Non-Adaptive Electrification Scenario

Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

Figure 10. Total Gas Sales, Non-Adaptive Electrification Scenario

Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

The Non-Adaptive Electrification scenario uses WGL's Fuel-Neutral Decarbonization scenario assumptions for the share of throughput that is AGF. This reflects WGL continuing on its preferred path, despite customers choosing a different path.

In the Non-Adaptive Electrification scenario, WGL's rate base decreases slightly as compared to the Fuel-Neutral decarbonization scenario, but nonetheless remains high, as seen in Figure 11. The relative decrease in rate base is a result of stranding assets as customers depart WGL's system before the full infrastructure investment can be recovered, as well as reduction in infrastructure growth to service new customers. The stranded asset costs are seen in Figure 12.

Figure 11. Rate Base, Non-Adaptive Electrification Scenario

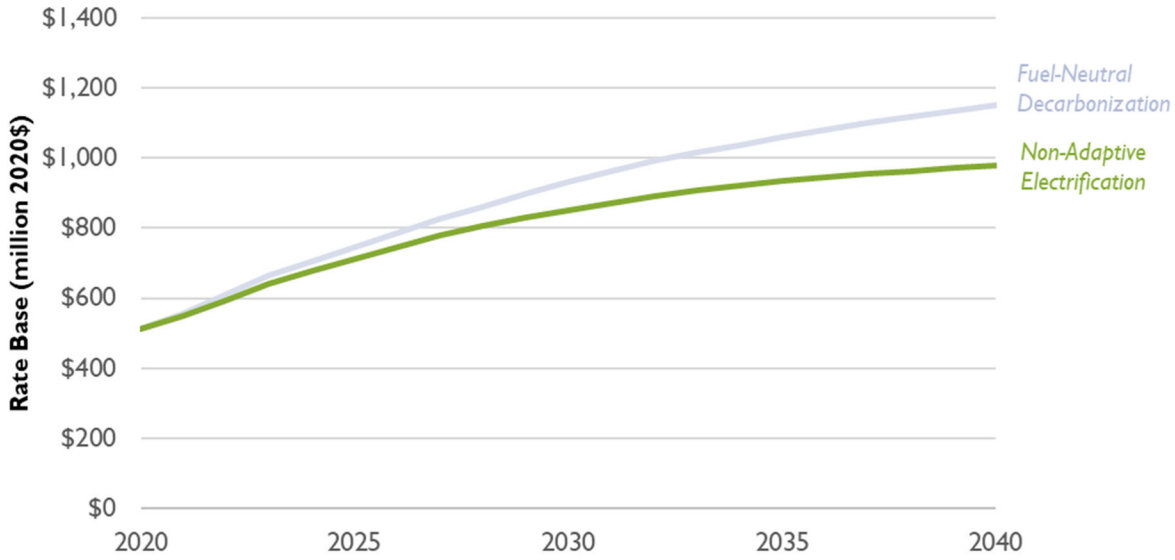
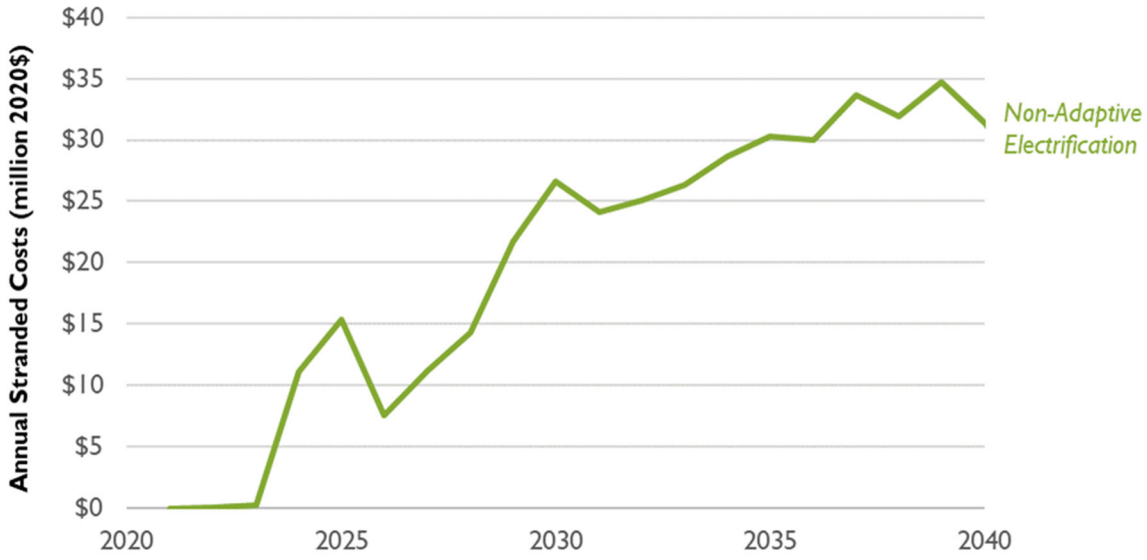


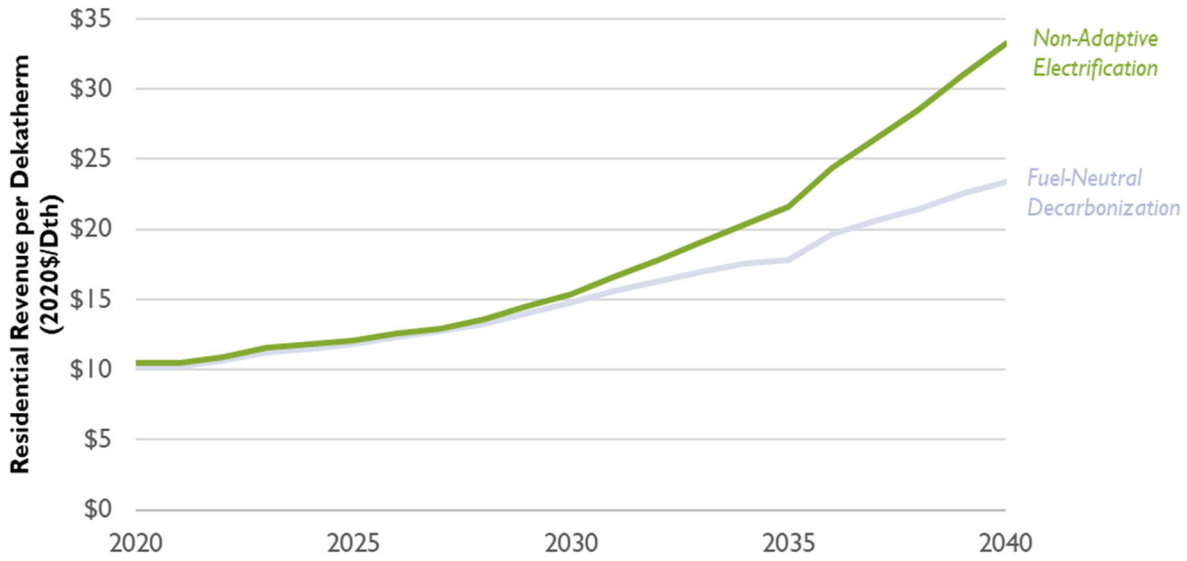
Figure 12. Stranded Costs, Non-Adaptive Electrification Scenario



The high stranded costs are due to WGL's continued investment in growing its system, despite customers leaving the system. This reflects the risk that WGL undertakes when attempting to pursue the Fuel-Neutral Decarbonization approach. As customers voluntarily depart WGL's Fuel-Neutral Decarbonization system due to steadily increasing costs, some assets will no longer be used and useful.

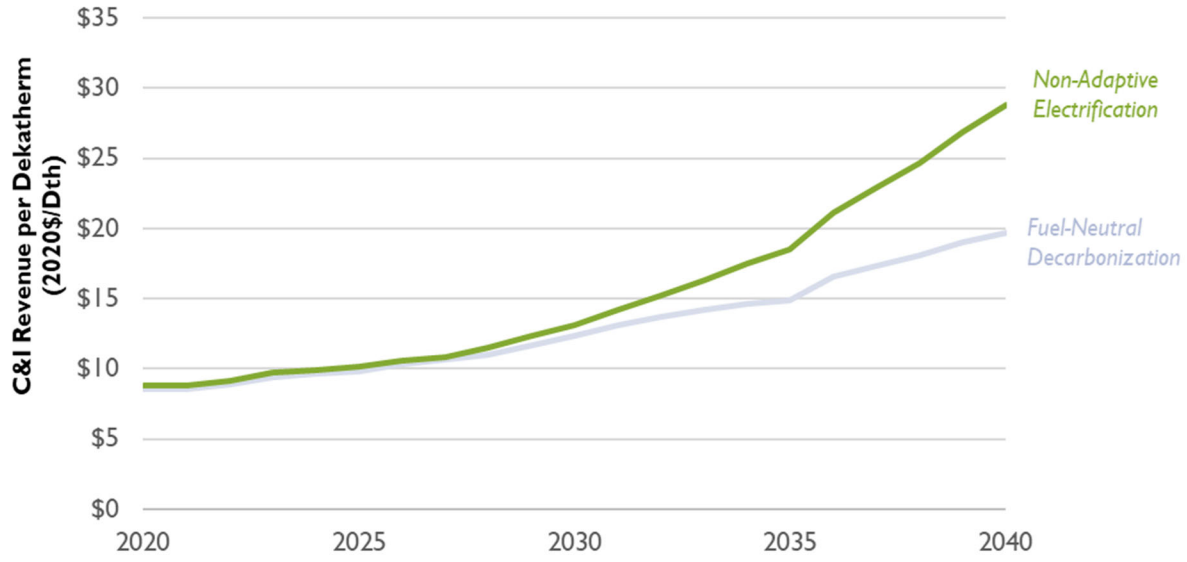
At the same time, customer rates will increase faster under the Non-Adaptive Electrification scenario, because there are fewer customers left to pay for the utility's high level of investment. This increase in customer costs, as seen in Figure 13 and Figure 14, will further drive customers to electrify.

Figure 13. Residential Revenue per Dekatherm, Fuel-Neutral Decarbonization Scenario



Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

Figure 14. C&I Revenue per Dekatherm, Fuel-Neutral Decarbonization Scenario



Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

Due to the increase in customer rates, the cost to operate a gas building will also increase. We expect the cost to operate an all-electric building to decrease over the same time period, further enticing customers to electrify their buildings as a means to reduce their energy costs. This building operating cost comparison can be seen in Figure 15 and Figure 16, for residential and commercial buildings, respectively.

Figure 15. Residential Annual Revenue Per Customer, Non-Adaptive Electrification Scenario

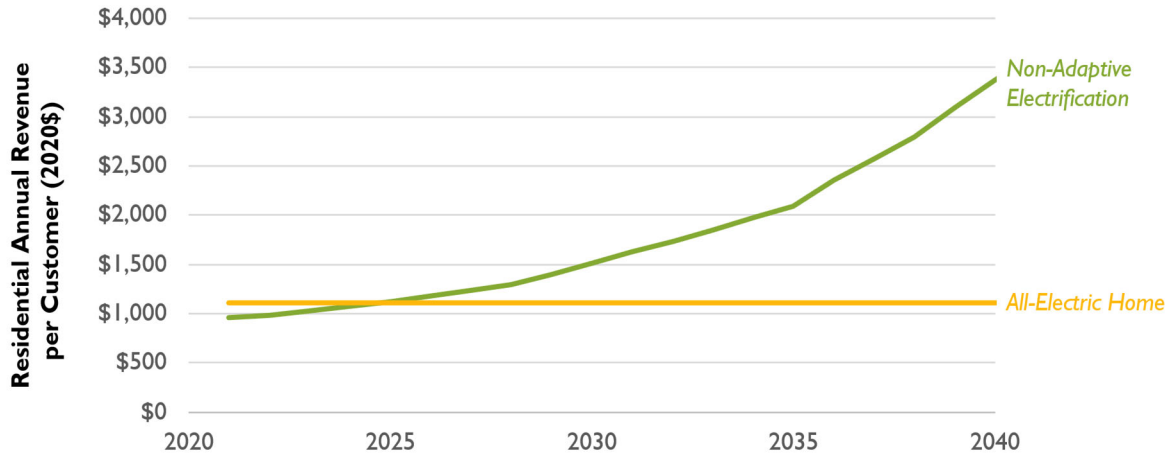
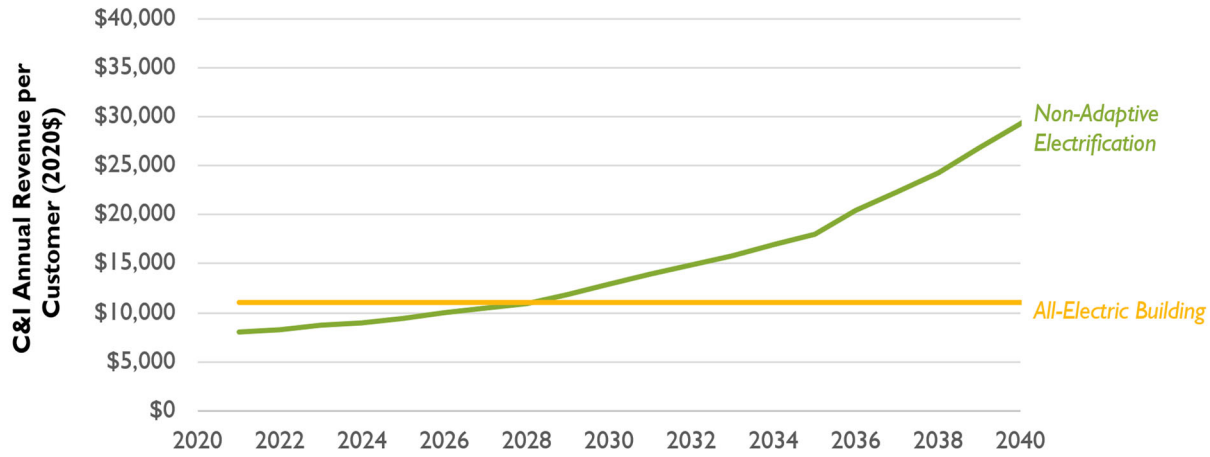


Figure 16. C&I Annual Revenue Per Customer, Non-Adaptive Electrification Scenario



As seen above, operating an average all-electric building will become more cost effective by the mid-2020s under the same conservative assumptions as used in the Fuel-Neutral Decarbonization comparison. That is, Synapse assumed the electric bills would remain constant for this simple comparison. Similarly, we used WGL's conservative AGF prices. More mid-level projections for each of those prices would accelerate the time frame for all-electric building operation becoming cheaper than gas building operation under the Non-Adaptive Electrification scenario.

If WGL continues on its current path, customers will depart its system at increasingly rapid rates. These customers will be able to reduce their building operating costs by electrifying and cutting off their use of the gas system. This departure from the gas system could leave customers who have the most difficulty electrifying their buildings, such as low-income customers and renters, bearing the costs of the remaining gas system.

3. Adaptive Electrification Scenario

To mitigate the risks of a rapidly shrinking customer base for WGL, Synapse modeled a third scenario: "Adaptive Electrification." In this scenario, Synapse uses the same assumptions and inputs from the Non-Adaptive Electrification scenario and updates WGL's rate of investment and depreciation methodology. These two adjustments are meant to illustrate what the future might look like if WGL intentionally decreases its pipe system investment and plans for a smaller future to accommodate its decreasing customer base.

Total customer counts and gas sales stay the same as in Non-Adaptive Electrification scenario, as seen in [redacted]

Figure 18. Total Gas Sales, Adaptive Electrification, Non-Adaptive Electrification, and Fuel Neutral Decarbonization Scenarios

The first difference between the Non-Adaptive and Adaptive Electrification scenarios is based on the utility's investment approach. In the GRM, Synapse modeled the impact of

updating *projectPIPES*, such that Phase III of this program is an electrification program, rather than a pipe replacement program. That means that starting in 2024, WGL would retire leak prone pipes and the corresponding buildings would electrify, rather than invest in new pipeline infrastructure. Synapse's analysis of utility finances did not include the costs of electrification assets (which would need to occur regardless of the utility's involvement), or assume that the utility would make these investments itself or treat them as rate base.

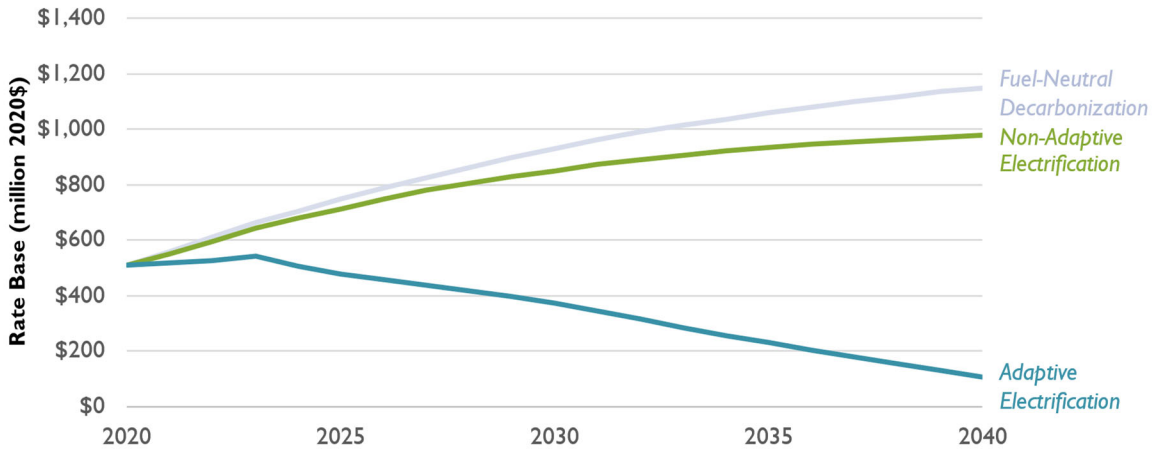
The Adaptive Electrification scenario also assumes that 80 percent of service replacements that are not associated with *projectPIPES* are retired, and the buildings electrify, instead of replacing those services. This updated methodology reduces WGL's pipeline investments and allows the utility to respond to the electrification already expected in its service territory.

Synapse also updated the modeled depreciation rates to reduce WGL's rate base to zero by 2045. By doing so, WGL would be able to recover its investors' funds on a timeframe comparable to the District's carbon neutrality goal. By 2045, WGL's customer base and rate base would both be minimal, and transition to the new steady state (which could include remaining service to selected sites where pipeline gas service is essential) could be planned. Accordingly, increasing depreciation rates in the near term will allow WGL to better recover its costs from a greater customer base and minimize the rate increases for any customers that remain through the electrification transition.

Based on these assumptions, WGL's rate base under the Adaptive Electrification decreases by 79 percent from 2020 to 2040, and would further decrease to 0 by 2045. In comparison, rate base increases by 91 percent in the Non-Adaptive Electrification scenario—to almost $1 billion inflation-adjusted dollars at risk—and by 125 percent in the Fuel-Neutral

Decarbonization scenario over the same time period. Thus, the Adaptive Electrification scenario is able to effectively reduce the risk of stranded assets after 2045.

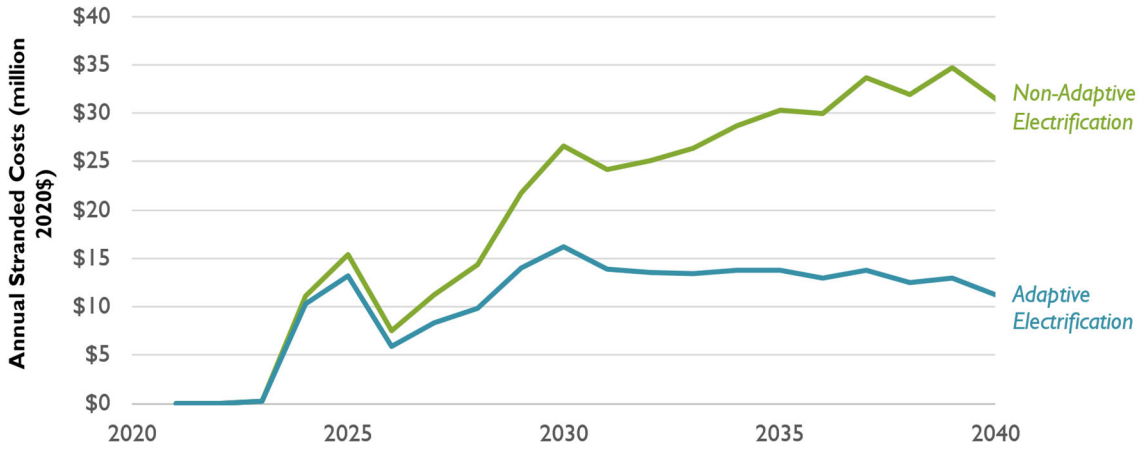
Figure 19. Rate Base, Adaptive Electrification and Non-Adaptive Electrification Scenarios



Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

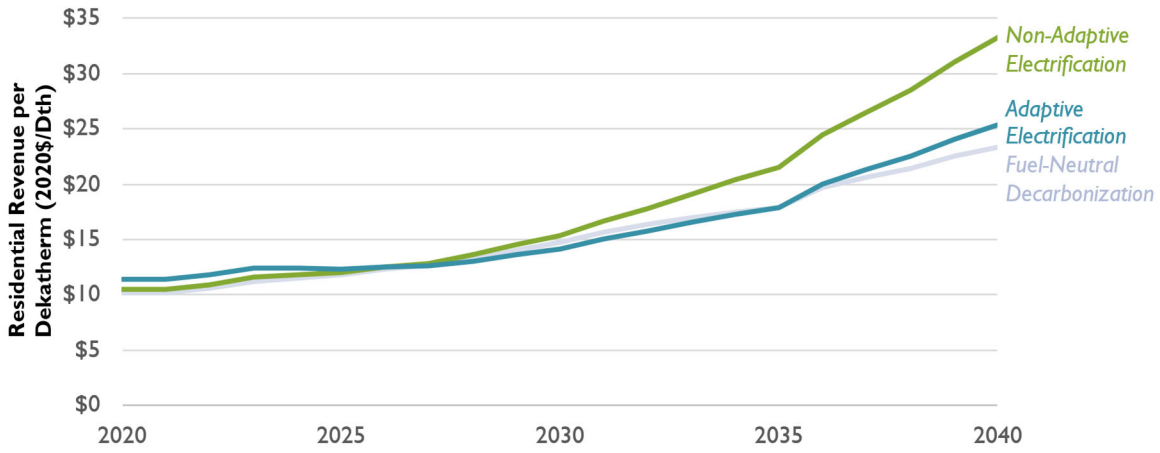
Through intentional system retirements, the Adaptive Electrification scenario sees reduced actual stranded assets that occur between 2020 and 2040. As seen in Figure 20, stranded costs in the Adaptive Electrification scenario do not increase as significantly as those in the Non-Adaptive Electrification scenario.

Figure 20. Stranded Costs, Adaptive Electrification and Non-Adaptive Electrification Scenarios



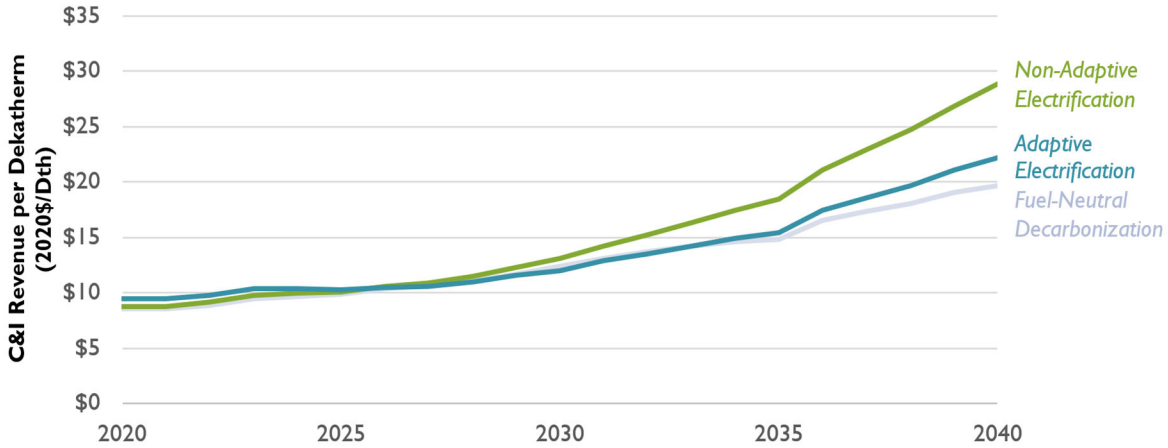
Additionally, while there is some initial rate increase, the adaption approach reduces the increase in customer gas rates, as compared to the Non-Adaptive Electrification scenario.

Figure 21. Residential Revenue per Dekatherm, Adaptive Electrification and Non-Adaptive Electrification Scenarios



Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

Figure 22. C&I Revenue per Dekatherm, Adaptive Electrification and Non-Adaptive Electrification Scenarios



Note: We provide the Fuel Neutral Decarbonization projections (light blue) for reference, however we caution that this scenario is not viable.

These results demonstrate that by adjusting its financial and investment approaches to the electrification that will occur within its territory, WGL can reduce increases in customer rates, to

a level similar to those estimated under its Fuel-Neutral Decarbonization scenario. As described earlier, the rates presented in the Fuel-Neutral Decarbonization scenario are unrealistic, due to the higher level of customer departures than WGL is currently planning for. Instead, the Adaptive Electrification scenario is able to keep rates below those that would occur if WGL attempts its Fuel-Neutral Decarbonization scenario. That is, the Adaptive Electrification scenario rates in 2040 are 23 percent lower than those in the Non-Adaptive Electrification scenario.

The lower rates also reduce the total costs to operate a gas building. As seen in Figure 23 and Figure 24, the costs to operate a gas building under the Adaptive Electrification is less than the costs under the Non-Adaptive Electrification scenario. As a result, while customers will still depart the gas system, due to the lower cost to operate an all-electric building, customers may depart at a slower rate. This lower rate of departure could allow WGL to scale down its infrastructure more carefully and intentionally. At the same time, customers who remain on the system in the later years will not face costs that are as high, potentially reducing the burden on low-income households and renters, or reducing the demand for other policy interventions or subsidies. While the Adaptive Electrification scenario does not fully mitigate the increasing gas costs during the electrification process, it better controls them to allow more time for WGL and policymakers to adjust to the change in heating infrastructure.

Figure 23. Residential Annual Revenue per Customer, Adaptive Electrification and Non-Adaptive Electrification Scenarios

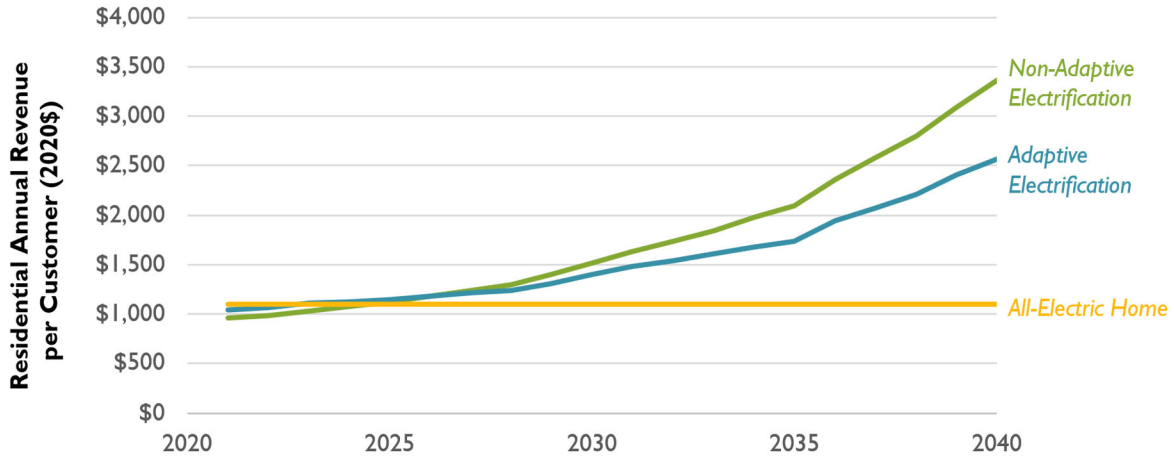
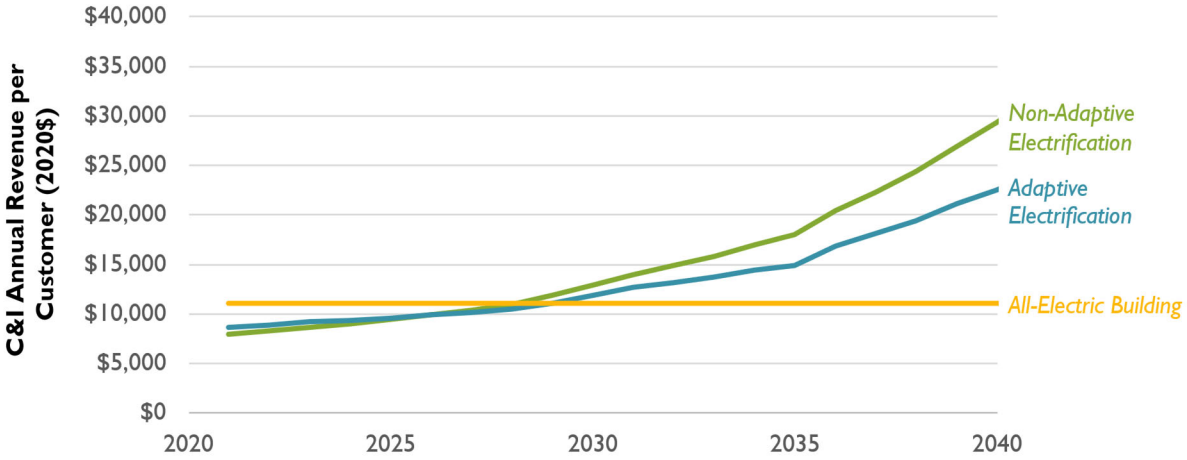


Figure 24. C&I Annual Revenue per customer, Adaptive Electrification and Non-Adaptive Electrification Scenarios



III. CONCLUSIONS

While Synapse's scenario modeling is necessarily approximate, given uncertainty in future fuel costs and the actions of utility management, it is clear from the modeling that WGL's preferred scenario, Fuel-Neutral Decarbonization, leads to increased customer bills. This increase is high enough that customers would begin to voluntarily electrify rather than maintaining their gas system hookup. Due to these departures, costs for the customers remaining on the system would further increase, thereby encouraging even more customers to depart the

gas system. This will create a self-reinforcing effect until there are few to no gas customers left on WGL's system. At this point, most or all of WGL's assets could be stranded, as the company would have no viable way to fully recover its prior investment costs without novel policy support. Moreover, since WGL plans to continue making significant investments in its pipeline infrastructure over the next 20 years, the value of its assets at risk of stranding will nearly double over the same timeframe. Thus, WGL is putting a significant amount of assets at risk.

Instead, if WGL adapts to the expected customer departures, the company can better manage increases in customer costs and reduce the risk and value of stranded assets. If WGL ceases its pipeline investment in favor of customer electrification and sets up a plan to fully depreciate its remaining assets by 2050, customer costs will not increase as drastically. At the same time, the risk that WGL will end up with stranded assets in 2050 also significantly decreases. While the company may be faced with stranded assets between 2020 and 2050, this risk is nonetheless reduced by adapting to electrification in DC.

Moreover, while none of these scenarios will exactly match reality—due to a number of variable factors including customer behavior, policy decisions, and feedback loops—they adequately demonstrate the relative scale and difference between each approach. As such, it is clear that WGL and the Commission must act now to protect customers on WGL's system from rapidly increasing costs during the electrification process in the District of Columbia.

WGL and the Commission can further work together to determine new business options for the utility in order to prevent them from completely shutting down. For example, WGL could invest in networked geothermal or heat as a service (that is, utility owned electric HVAC systems). WGL could also continue to support District heating and other critical infrastructure investments that use AGFs, where electrification is not feasible.

As previously stated, the Commission should use this docket to establish a decarbonization framework for both Pepco and WGL that is consistent with District climate change policy, advances equity, and protects customers. The Synapse analysis presented here, and conducted in response to stakeholder comments on the risks and costs of WGL's investment plan, illustrates the importance of promptly establishing a clear framework so that both utilities can make long-term plans for the infrastructure and finances.

CERTIFICATE OF SERVICE

I certify that on October 3, 2022, a copy of the District of Columbia Government's Consolidated Reply Comments on Washington Gas Light Company's Climate Business Plan Filings (Public Version) was electronically delivered to the following parties:

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