

SECTION ONE

EXECUTIVE SUMMARY

Maryland’s gas utilities are at a critical juncture. As gas use in buildings faces increasing competition from highly efficient electric technologies, and as the State pursues ambitious climate goals, the future role of natural gas infrastructure is uncertain. Yet despite this shifting landscape, Maryland’s gas companies continue to propose and pursue significant capital investments in their distribution systems, both through the State’s Strategic Infrastructure Development and Enhancement (STRIDE) law and through non-STRIDE infrastructure programs.

For the last decade, these investments have been driving significant increases in gas utility customer bills. To understand the future impacts of these investments, Maryland’s Office of People’s Counsel (OPC) engaged DHInfrastructure to develop projections of investment levels and corresponding rate impacts for the State’s three largest gas distribution companies—Baltimore Gas and Electric (BGE), Washington Gas Light (WGL), and Columbia Gas of Maryland (CMD)—based on the companies’ current respective spending trajectories. This report—the third version, following versions published in October 2022 and November 2023—presents and analyzes DHInfrastructure’s projections and explains how they were developed. It also examines how natural gas distribution and commodity rates have changed over the last decade based on actual data. Below we summarize the findings.

Maryland’s three largest gas companies continue to pursue massive capital investment programs either directly through STRIDE or other programs aligned with STRIDE objectives...

In 2013, the Maryland General Assembly enacted the STRIDE law, section 4-210 of the Public Utilities Article, Annotated Code of Maryland. The STRIDE statute authorized Maryland gas utility companies to file infrastructure investment plans and corresponding project cost-recovery schedules to the Commission for approval.

The statute requires that companies receive approval of their STRIDE plans on five-year cycles. BGE, WGL,

and CMD all requested and received approval for both initial five-year plans that began in 2014 and second five-year plans that were completed in 2023. As of January 2025, WGL is the only company with an active five-year STRIDE 3 plan, which the company will implement from 2022 through 2028. Columbia submitted an initial STRIDE 3 plan in 2023, then withdrew that plan and filed a revised plan in July 2024, only to withdraw the revised plan on December 30, 2024. As for BGE, it did not file a STRIDE 3 plan for its ongoing pipe replacement work. Instead, the company is pursuing that work under its second multi-year rate plan (“MYRP 2”), which covers the three-year period from 2024 through 2026.

WGL and BGE may have taken different paths with their STRIDE 3 plans, but their overall capital replacement strategies remain the same. Both companies continue to follow wholesale replacement strategies that aim to replace every single pipe made of materials targeted through their approved STRIDE 2 plans. In fact, the scope and duration of the company's STRIDE plans appear to be expanding. As part of its STRIDE 3 filing, WGL indicated that its STRIDE activities would not be completed until 2043, eight years later than the original end-date of WGL's STRIDE work.

Although it is unclear whether CMD will file another STRIDE plan, both of the company's withdrawn STRIDE 3 applications indicated that the company has ambitions to extend its accelerated replacement activities well beyond the timeline it presented in its STRIDE 1 and 2 plans. At the end of STRIDE 2, the company was on track to complete its targeted STRIDE replacements in 2026. Instead of short-term plans to address the remaining pipe materials targeted under STRIDE 1 and 2, both of CMD's STRIDE 3 plans proposed replacing new categories of pipe materials and other assets. This could extend the company's STRIDE program by up to 20 years.

Table 1.1 shows the amounts that BGE, WGL, and CMD spent on their first two STRIDE plans

(2014-2023) and projects the companies' spending on accelerated infrastructure replacement activities from 2024 to 2043. BGE's spending is based on the STRIDE-like program in the company's current MYRP. (Again, BGE does not currently have a STRIDE plan per se). WGL's spending is based on the company's current STRIDE plan. CMD is conservatively assumed not to pursue further STRIDE plans. Essentially, Table 1.1 indicates that BGE and WGL's STRIDE plans are less than halfway complete and that there is upwards of \$7,200 million remaining to be invested through STRIDE alone over the next 20 years.

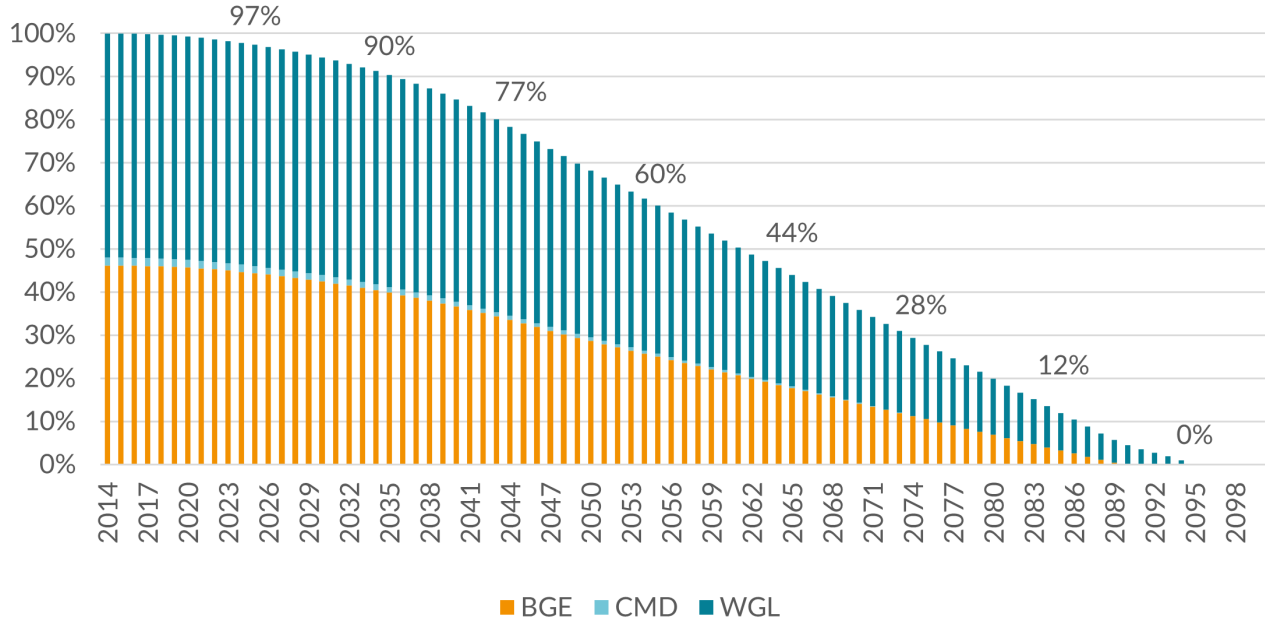
Maryland customers are only at the early stages of paying for STRIDE...

We determined the portion of the total STRIDE costs that have already been recovered through rates and, conversely, what portion of the STRIDE costs remains to be recovered. An investment is being "recovered" through rates until it is fully depreciated. Utilities under rate-of-return regulation receive a "return on" the undepreciated value of an investment in the form of a return on equity and a "return of" the investment in the form of depreciation expenses. Accordingly, we use cumulative STRIDE depreciation to represent the amounts recovered through rates.

Table 1.1: STRIDE/STRIDE-Like Investment Plans of Maryland's Three Largest Gas Utilities (million \$)

	BGE	WGL	CMD
Actual STRIDE 1 (2014-2018) spend	\$522.7	\$220.8	\$66.2
Actual STRIDE 2 (2019-2023) spend	\$781.9	\$377.9	\$104.8
Estimated STRIDE 3 (2024-2028) budget	\$653.7	\$330.1	\$0
Estimated STRIDE 4 (2029-2033) budget	\$722.0	\$614.6	\$0
Estimated STRIDE 5 (2034-2038) budget	\$777.8	\$1,099.5	\$0
Estimated STRIDE 6 (2039-2043) budget	\$837.9	\$2,195.7	\$0
All-time Total STRIDE 1 to STRIDE 6	\$4,295.9	\$4,838.6	\$171.0
Future Total = STRIDE 3 to STRIDE 6	\$2,991.3	\$4,239.9	\$0
Three-company All-time Total		\$9,305.5	
Three-company Future Total		\$7,231.2	

Figure 1.1: Amount of STRIDE Cost Recovery Remaining Across Maryland's 3 Largest Gas Utilities



We combined the results of the individual companies into Figure 1.1 to provide a holistic view of the remaining years that STRIDE costs will be recovered through rates in Maryland. What is important to recognize from this figure is that right now, in February 2025, only 3 percent of total projected STRIDE costs have been recovered through rates. If spending is allowed to continue on the current trajectory, Maryland customers will be paying for STRIDE costs until 2094.

...and companies will also continue to invest in gas infrastructure outside of STRIDE well into the future.

Maryland gas utilities are also continuing to invest in other capital asset categories not covered by their STRIDE and STRIDE-like plans. This includes the normal or non-accelerated replacement activities that CMD will likely pursue absent an approved STRIDE plan. Our conservative estimate is that if the companies spend on non-STRIDE activities at current levels, they will make another \$42,098 million in investments outside of STRIDE between 2024 and 2100. As shown in Table 1.2 the combined STRIDE and non-STRIDE investments are \$49,329 million. In 2025 alone, Maryland gas utilities will spend a projected \$744 million on gas capital expenditures.

Table 1.2: Maryland Gas Capital Expenditure (CAPEX) Investments, 2024-2100 (million \$)

Utility	STRIDE (2024-2043)	Non-STRIDE (2024-2043)	Non-STRIDE (2044-2100)	Total (2024-2100)	Change in Total from 2022 Study	
					(\$)	(%)
BGE	\$2,991	\$8,448	\$24,076	\$35,515	+\$11,780	+50%
WGL	\$4,240	\$2,158	\$6,149	\$12,547	+\$3,933	+46%
CMD	--	\$487	\$779	\$1,267	+\$386	+44%
Total	\$7,231	\$11,093	\$31,005	\$49,329	+\$16,099	+48%

If this pace of investment continues, the capital component of the revenue requirements collected from customers will more than double over the next 25 years...

To understand the impact of our capital investment projections on gas utility rates, we first developed a revenue requirement model that estimated the capital-related components of the revenue requirement. Roughly speaking, the “revenue requirement” consists of the utility’s total revenue needed to serve customers for a given year. The annual revenue requirement is divided by anticipated sales to arrive at the per therm rate that customers pay. (The term is defined in the glossary at the end of this report.) Importantly for customers, the capital investment portion of the revenue requirement accounts only for the costs related to a utilities’ spending on capital expenditures such as depreciation, return on equity, and property taxes; it does not include (a) the utilities’ operational costs nor (b) gas commodity costs that customers pay in their bills.

All utility capital investment enters the utility’s rate base. The rate base is the undepreciated value of utility plant-in-service, comprised of the utility’s prior capital investments less accumulated depreciation. Rate base determines the capital investment-related portion of the utility’s revenue requirement (i.e., the annual revenues the utility is authorized to recover from its customers through its rates). Capital investments are recovered from the utility’s customers over time—through a depreciation charge—often more than 30 years, and as long as 70 years, depending on the expected life of the asset—until it is fully depreciated. Customers pay both a “return of” investments, in the form of depreciation, and a “return on” investments. The “return on” component equals the utility’s weighted cost of capital (WACC)—a combination of debt and shareholder equity—expressed as a percentage multiplied by the utility’s rate base.

Each utility has its own WACC, which is sometimes referred to as its “rate of return.” The WACC is “grossed up” so that customers pay for the utility’s taxes due on its anticipated profits.¹ The WACC with the gross up is generally around 10 percent, which is analogous to an interest rate paid on the amounts in rate base. Since the WACC with the gross up is multiplied by the utility’s rate base, the larger the rate base, the greater the utility’s return and shareholder profits.

The pyramid in figure 1.2 reflects the gas companies’ revenue requirement. This figure provides context for the current status of the utilities’ overall STRIDE plans. As identified by the arrow and dotted line, the combined 2024 capital investment component of the utilities’ revenue requirement of approximately \$249 million across the three STRIDE programs represents a fraction, 25 percent, of the \$970 million peak in STRIDE revenue requirements that we project for 2044. In other words, if STRIDE plans continue as currently constituted, Maryland customers could eventually be paying, annually, upward of three times more for STRIDE investments than the amounts customers spent in 2024.

The STRIDE annual revenue requirement amounts pictured above represent only a fraction of the total aggregate capital investment related revenue requirements customers will need to pay to cover capital investments made over the next 80 years. As shown in Figure 1.2, the STRIDE and non-STRIDE capital additions we project through 2100 would result in annual capital revenue requirements for the three utilities exceeding \$2.33 billion dollars by 2044 or **2.8** times the combined \$849 million in capital investment related revenue requirements customers paid through rates in 2024. Put another way, customers today are responsible for paying less than half of the capital investment related costs that customers will be responsible for in 2044.

¹ The tax “gross-up” covers the federal and state income taxes due if the utility earns its WACC, the property taxes related to the capital investment and certain other miscellaneous fees.

Figure 1.2: STRIDE Annual Revenue Requirement Pyramid

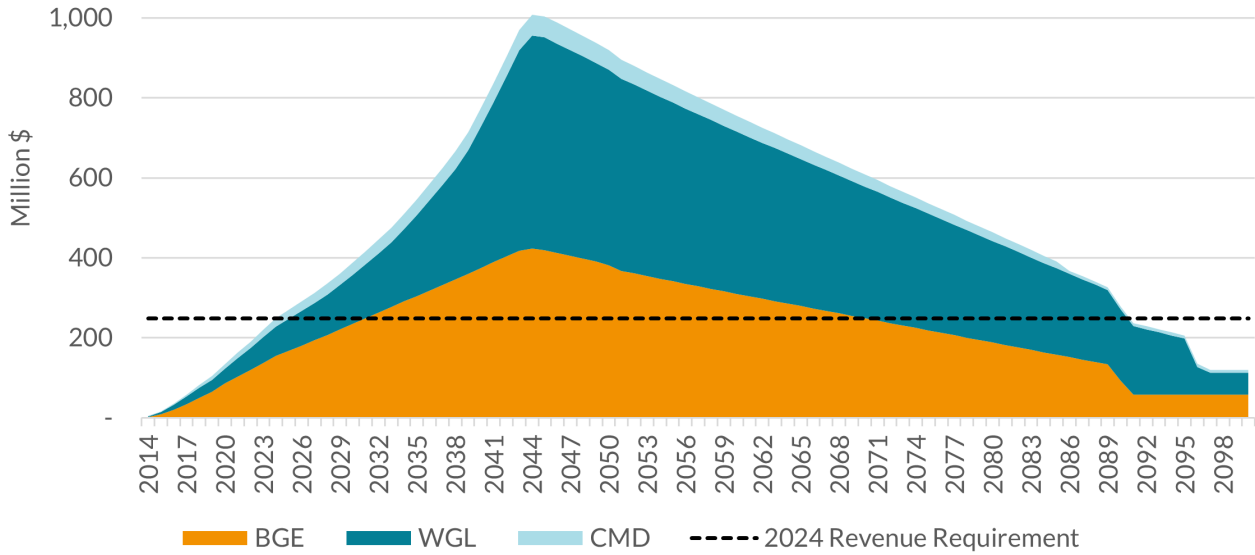
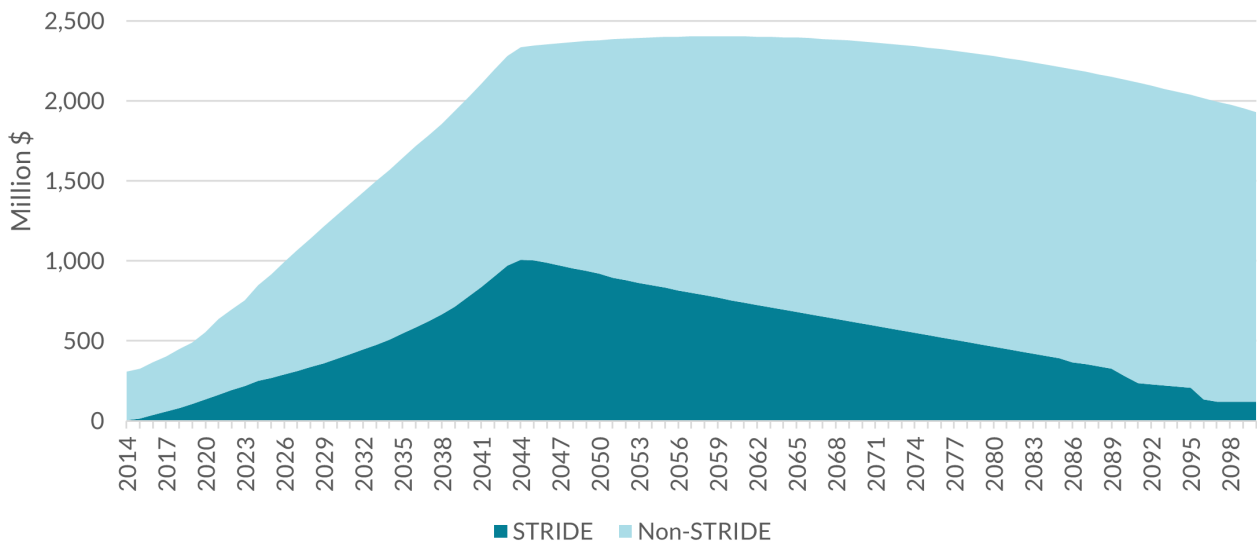


Figure 1.3 provides both a comparison of the combined non-STRIDE (aqua) and STRIDE (teal) capital investment-related revenue requirements across the combined three companies and shows how the total capital investment related revenue requirements (aqua + teal) will evolve over time.

...which will result in corresponding increases in base rates charged to customers to cover the rise in rate base.

Next, we identified how the capital investments will affect customer rates. This step allocates revenue to the residential heating class of each company using the revenue allocation factors from the most recent STRIDE filings. We set the billing determinants for customer-months and usage based on the revenue calculations in the compliance filing from each company's most recent rate case. We assumed the customer and sales numbers are constant over the evaluation period. Stated otherwise, the projections

Figure 1.3: Combined Three-Company STRIDE and Non-STRIDE CAPEX Annual Revenue Requirement



do not account for any migration of gas customers to electric service as a result of electrification policies.

To show the bill impacts over time, we evaluate the typical bill for a winter customer using 160 therms per month in January and February. We use this period because these months tend to have the highest gas bills for customers.

Figure 1.4 shows that the BGE typical residential customer’s bill will grow from an average of \$240 in 2022-2024 to \$402, a 67 percent increase, by 2035

and \$498, a 107 percent increase, by 2050. This estimate assumes commodity prices stay around the five-year averages and that gas sales do not decline. If gas prices experience another shock like in 2022, when commodity prices reached around \$1.00 per therm, then that would add an additional \$51 per month to the typical winter bill. The effects of declines in gas consumption for each company are addressed further below.

Figure 1.5 shows that the WGL typical residential customer’s bill will grow from an average of \$194 in

Figure 1.4: BGE Typical Winter Bill, 2014-2100

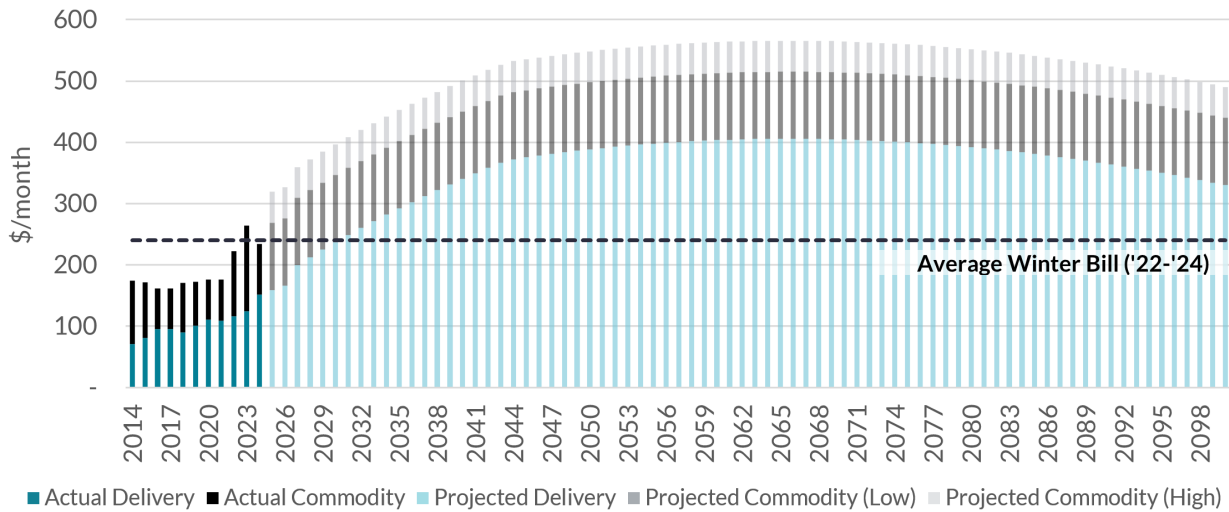


Figure 1.5: WGL Typical Winter Bill, 2014-2100

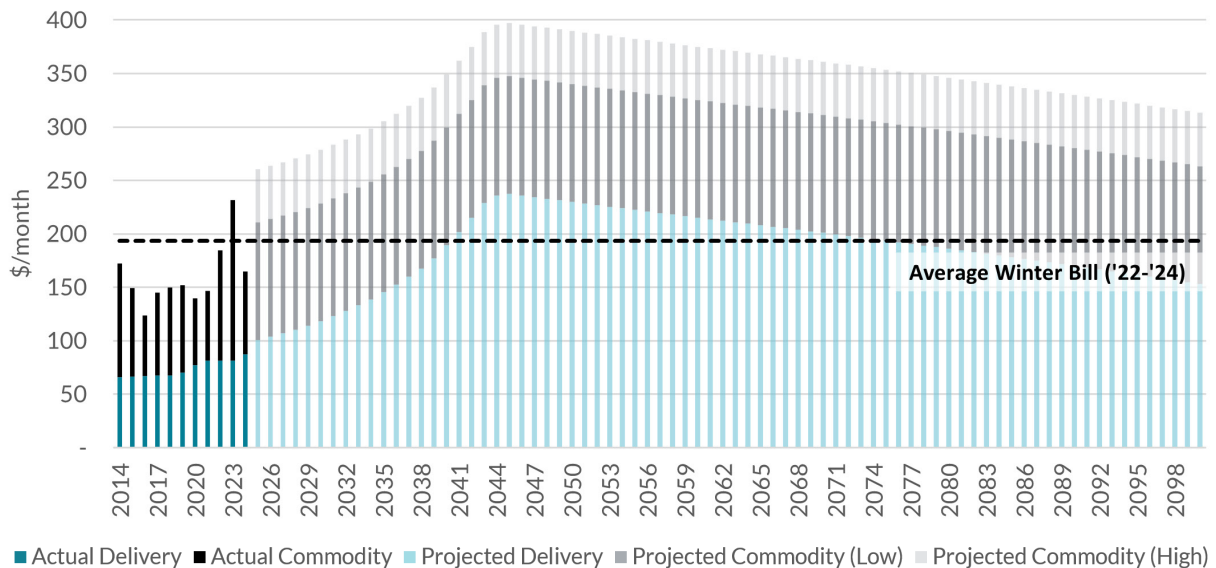
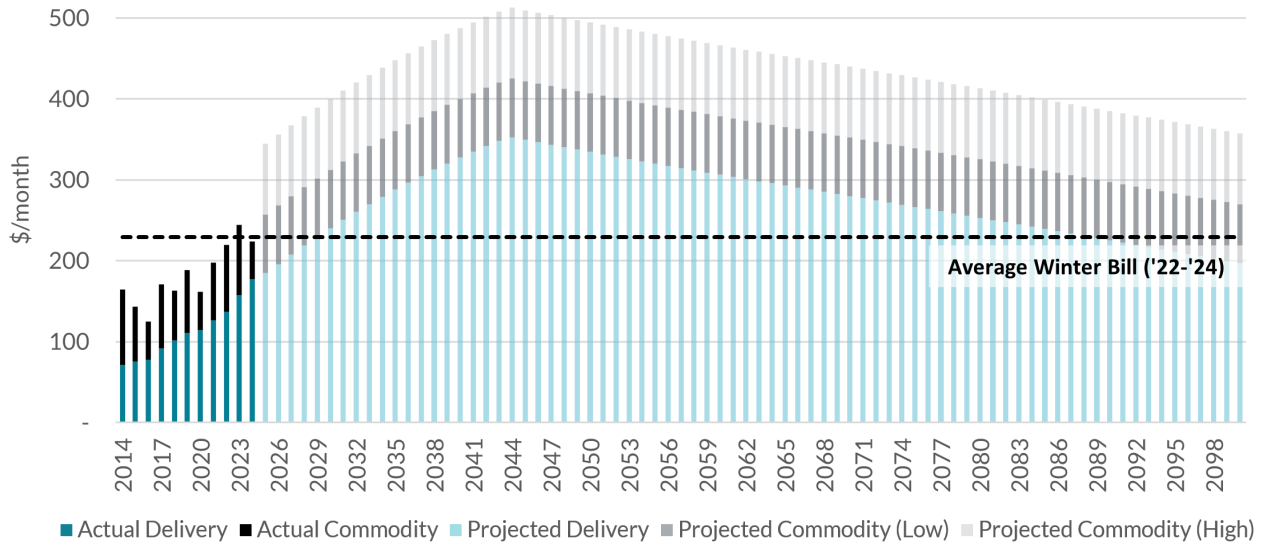


Figure 1.6: CMD Typical Winter Bill, 2014-2100



2022-2024 to \$256, a 32 percent increase, by 2035 and \$340, a 76 percent increase, by 2050. This too assumes commodity prices stay at the five-year averages. If gas prices experience another shock and go back to \$1.00 per therm, the typical winter bill would increase by an additional \$50 per month.

Figure 1.6 shows that the CMD typical residential customer's bill will grow from an average of \$229 in 2022-2024 to \$337, a 47 percent increase, by 2035 and \$365, a 59 percent increase, by 2050. If gas prices experience another shock and go back to \$1.00 per therm that would add an additional \$88 per month to the typical winter bill.

As customer preferences change and as Maryland pursues its climate goals, gas utilities face the prospect of declining customer counts even as they continue making substantial system investments.

Potential gas customer migration would only further accelerate the projected increases in base rates and monthly residential bills.

The bill projections presented above represent a business-as-usual ("BAU") scenario that assumes customer counts remain stable over time. Highly efficient electric appliances are proving competitive with gas appliances,² however, and Maryland's climate goals include policies to promote building electrification, which will likely drive some customers to migrate away from gas service. As customer preferences change and as Maryland pursues its climate goals, gas utilities face the prospect of declining customer counts even as they continue making substantial system investments. Base rates would need to increase significantly to recover the same costs from fewer customers and sales.

We analyze the rate implications of potential customer migration through three reduction scenarios—10, 30, and 70 percent fewer customers—assuming current rate design remains the same.

2 Electric heat pumps are outselling gas furnaces and growing as a share of overall heating systems, while continuing to make efficiency gains. See <https://www.washingtonpost.com/climate-solutions/2024/10/21/heat-pump-sales-slump-us-europe/>; <https://www.washingtonpost.com/climate-solutions/2024/11/14/cold-climate-heat-pump-winter/>.

Figure 1.7 shows that the higher rates translate into significantly higher monthly winter bills for any remaining BGE customers. By 2035, the typical BGE winter bill could vary significantly depending on the customer migration scenario:

- Under the 10% reduction scenario, the winter bill could be \$491 (high commodity), which is \$36 or 7.5% higher than the BAU projection of \$455.
- Under the 30% reduction scenario, the same winter bill reaches \$595 – an additional \$140 or a total bill 1.31 times the BAU amount.
- Under the 70% reduction scenario, the winter bill reaches \$1,219 – an additional \$764 or a total bill 2.7 times the BAU amount.

Figure 1.8 shows how the typical WGL customer’s monthly winter bill might change due to customer migrations. The winter bill of the typical WGL customer varies widely by 2035 by migration scenario:

- Under the 10% reduction scenario the winter bill could be \$324 (high commodity), which is \$19 or 6.1% higher than the BAU projection of \$306.

- Under the 30% reduction scenario, the same winter bill reaches \$377 – an additional \$72 or a 23.5% increase over the BAU winter bill.
- Under the 70% reduction scenario, the winter bill reaches \$696 – an additional \$391 or a total bill 1.28 times the BAU amount.

Figure 1.9 shows how the typical CMD customer’s monthly winter bill might change due to customer migrations. The winter bill of the typical CMD customer could also vary widely in 2035 depending on the customer migration scenario:

- Under the 10% reduction scenario the winter bill could be \$456 (high commodity), which is \$32 or 7.6% higher than the BAU projection of \$424.
- Under the 30% reduction scenario, the same winter bill reaches \$549 – an additional \$125 or a 29.3% increase over the BAU.
- Under the 70% reduction scenario, the winter bill reaches \$1,102 – an additional \$678 or a total bill 1.60 times the BAU amount.

Figure 1.7: BGE Typical Winter Bill with Declines in Consumption by Scenario and Year

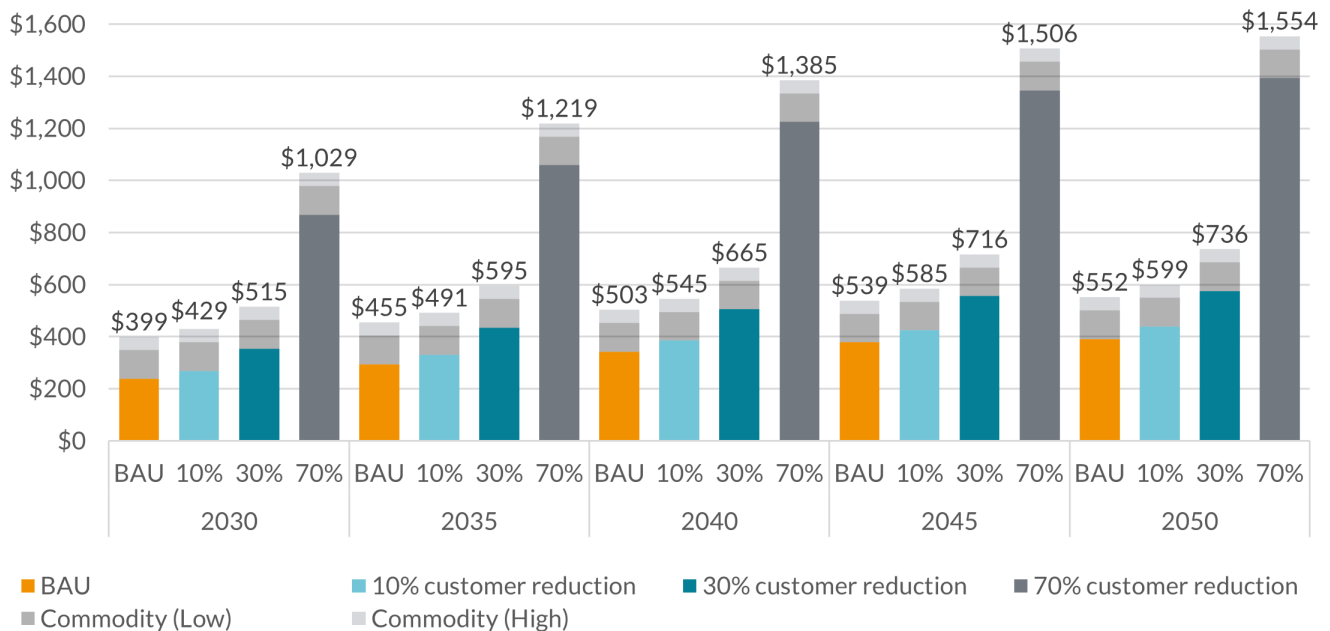


Figure 1.8: WGL Typical Winter Bill with Declines in Consumption by Scenario and Year

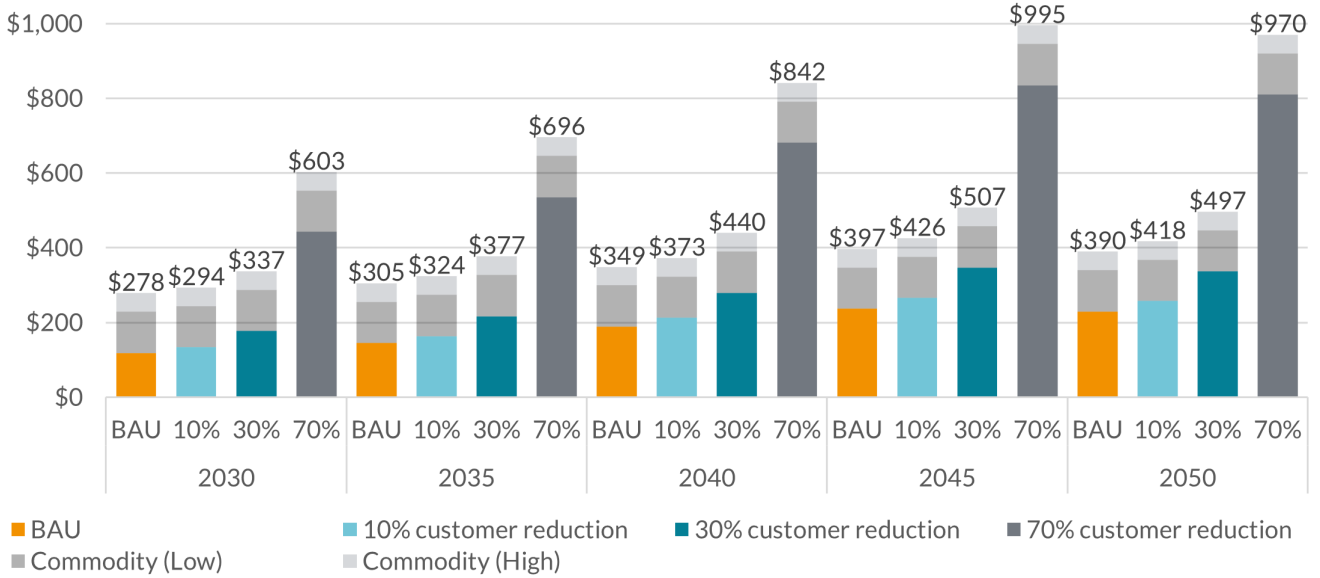
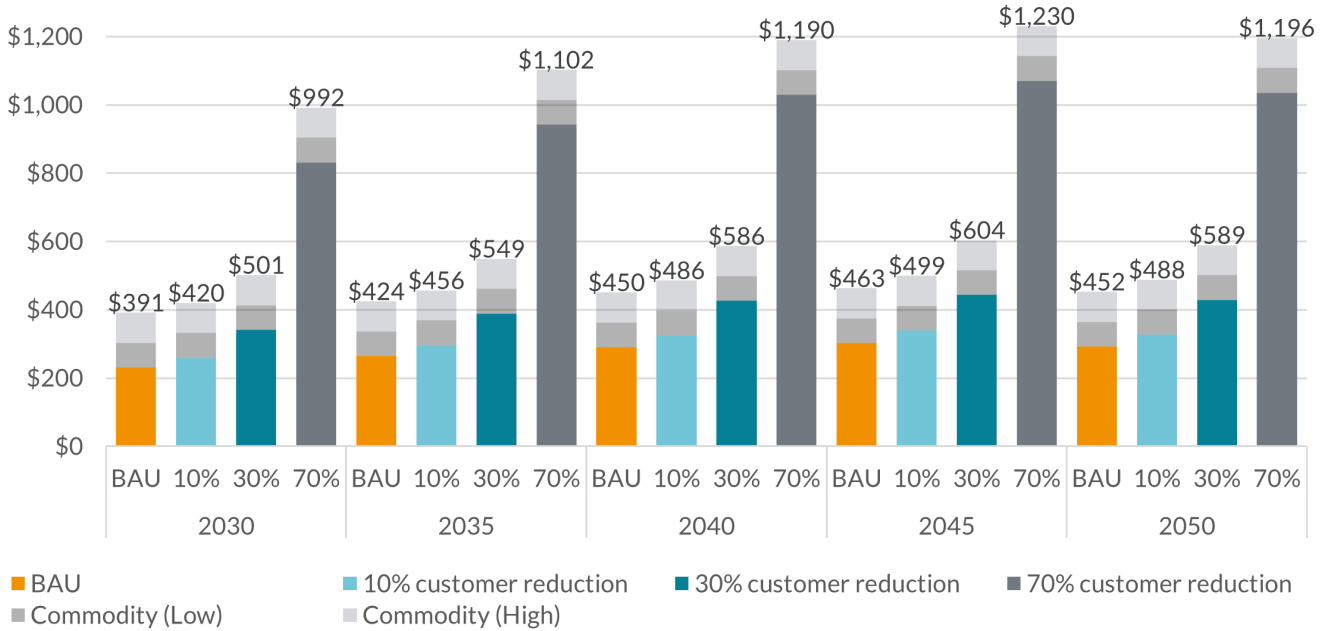


Figure 1.9: CMD Typical Winter Bill with Declines in Consumption by Scenario and Year



New subscription business models might provide companies better revenue protection...

One option to address the massive rate increases that would result from significant declines in gas consumption would be to change how utilities currently recover their annual revenue requirement based largely on volumetric charges. A change to a

“subscription” model, as suggested by BGE in recent regulatory proceedings, would require customers who rely on the system (for all or certain appliances, or as a “backup” heating source, as BGE suggests) to pay a subscription fee that would cover the revenue requirement rather than using volumetric charges.

Table 1.3: Sample of Annual Subscription Fees by Scenario and Year

	10% reduction in customers			30% reduction in customers			70% reduction in customers		
	2030	2035	2050	2030	2035	2050	2030	2035	2050
BGE	\$1,239	\$1,503	\$1,971	\$1,593	\$1,932	\$2,534	\$3,717	\$4,508	\$5,914
CMD	\$1,357	\$1,531	\$1,679	\$1,745	\$1,969	\$2,159	\$4,071	\$4,594	\$5,038
WGL	\$742	\$891	\$1,325	\$954	\$1,146	\$1,703	\$2,226	\$2,673	\$3,974

A subscription charge would, in practical effect, change the current method of recovering the utilities' annual revenue requirement from a relatively small monthly charge plus a much larger charge based on customer usage—the volumetric charge, or rate—to recover all costs through the monthly charge.

We estimate the annual subscription fee for the same customer reduction scenarios—10, 30, and 70 percent—as we apply to conventional volumetric rates to understand how changing the method of utility cost recovery might work in Maryland in the future. Table 1.3 provides a sample of the subscription fees estimated for the 10 percent and 70 percent customer reduction scenarios in 2030, 2035, and 2050.

For comparison purposes, current monthly customer charges are, annualized, \$186.60, \$195.00, and \$158.28 for BGE, CMD, and WGL respectively. These amounts reflect what a customer currently would expect to pay by remaining on the gas system for a year without actually using any gas. As Table 1.9 shows, a subscription model of recovery would increase those costs significantly.

...but the level at which these charges would need to be set to fully recover system costs would be so high that few customers would be likely to pay for subscription service over time.

The prospects of the gas companies moving to a subscription model for all customers—or just customers who use limited gas—would materially alter how customers make electrification investment decisions. Today, a BGE customer deciding whether to completely electrify (with no gas backup) or pursue a hybrid-system might assume that they will only be responsible for paying the current monthly charge that amounts to \$186.60 per year (\$15.55 monthly fixed charge x 12) if no gas is used. If customers understand that they would instead be paying \$1,000 to \$5,000 per year by 2035, the economics of full electrification versus maintaining a gas connection for limited purposes—such as a hybrid heating system that uses gas on rare occasions as backup—change significantly.

Further, subscription fees would only provide access to the company's distribution systems. Customers would then have to pay for the gas commodity used. The subscription fee and gas commodity costs would also be on top of the increase in a customer's electric bill for electricity used to heat their home. Taken all together, the magnitude of the subscription fees we project with only modest (10 percent) customer departures (\$891 to \$1,522 by 2035) raise questions about the practicality of maintaining gas services for low levels of gas consumption.