ORDER NO. 88714

IN THE MATTER OF THE APPLICATION OF BALTIMORE GAS AND ELECTRIC COMPANY FOR APPROVAL OF A NEW GAS SYSTEM STRATEGIC INFRASTRUCTURE DEVELOPMENT AND ENHANCEMENT PLAN AND ACCOMPANYING COST RECOVERY MECHANISM	* * * * * * * * *	BEFORE THE PUBLIC SERVICE COMMISSION OF MARYLAND CASE NO. 9468

Issue Date: May 30, 2018

I. Background

The Baltimore Gas and Electric Company ("BGE" or "Company") filed an Application on December 1, 2017, for approval by the Maryland Public Service Commission ("Commission") of a new gas system Strategic Infrastructure Development and Enhancement ("STRIDE 2") Plan and an accompanying cost recovery mechanism ("Application") to become effective January 1, 2019.[1] The Company's Application was filed pursuant to Section 4-210 of the Public Utilities Article, *Annotated Code of Maryland*, ("PUA"),[2] which authorizes BGE to seek Commission approval for its

[1] BGE's original STRIDE plan operated 2014 – 2018. See: *In the Matter of the Application of the Baltimore Gas and Electric Company for Approval of a Gas System Strategic Infrastructure Development and Enhancement Plan and Accompanying Cost Recovery Mechanism,* Case No. 9331, Order No. 86147, January 29, 2014.
[2] All statutory references are to PUA §4-210, or the STRIDE statute, unless otherwise noted.

infrastructure replacement plan and surcharge cost recovery pursuant to statutory guidelines.[3]

According to the Application, BGE proposes its STRIDE 2 Plan, the initial five year period for which it now seeks approval from the Commission, to replace from its natural gas distribution system the entire population of the following five asset classes: (1) Cast Iron Main, (2) Bare Steel Main, (3) Bare Steel Services, (4) Copper Services, and (5) Pre-1970 ¾" High Pressure Steel Services.[4] BGE also seeks approval from the Commission of a monthly assessment – the STRIDE surcharge – to recover concurrently the costs to implement the STRIDE 2 plan. Under BGE's STRIDE 2 Plan the Company also plans to replace assets, regardless of material type, for system safety or reliability purposes, as such assets are encountered in the efforts to replace the five targeted assets. The asset replacement work will be accomplished through BGE's existing gas system asset replacement programs, but at a greatly accelerated pace. For the five year period of the STRIDE 2 Plan (2019-2023), the estimated cost of the initial five year period of BGE's gas system infrastructure replacement plan (2019 to 2023) is approximately $963 million.

Founded in 1816, BGE is the oldest gas distribution company in the nation. Like many older gas systems, a larger portion of its gas main and services infrastructure consists of cast iron and bare steel – materials that are obsolete and susceptible to failure

[3] A Prehearing Conference in this matter was held on January 4, 2018. At that time, Maryland Energy Group's ("MEG") Petition to Intervene was granted, and appearances were entered by the Commission's Technical Staff ("Staff") and the Maryland Office of People's Counsel ("OPC"). Evening public comment hearings in this case were conducted on March 13 and 14, 2018. Following evidentiary hearings on March 22 and March 23, 2018, the parties filed initial and reply briefs on April 16 and April 30, 2018.

[4] APPLICATION OF BALTIMORE GAS AND ELECTRIC COMPANY FOR APPROVAL OF A NEW GAS SYSTEM STRATEGIC INFRASTRUCTURE DEVELOPMENT AND ENHANCEMENT PLAN AND ACCOMPANYING COST RECOVERY MECHANISM ("BGE Application") filed December 1, 2017 at 5.

with age. According to BGE, about one-third of the Company's gas mains and services in use on the gas distribution system are over 50 years old.[5] BGE also stated that "while age is not the only determining factor in the performance of gas system assets, it is a driver behind the amount of outmoded materials BGE currently has in service on its gas distribution system with approximately 20% of the system consisting of outmoded materials such as cast iron and bare steel.[6] This Commission has strongly supported efforts by the State's gas utilities to modernize their aging infrastructure to ensure the continuing safety and reliability of their systems. While we have encouraged, indeed even pushed our utilities to do more, we have granted cost recovery for these critical investments under traditional ratemaking principles. However, in January 2014 after the Maryland General Assembly passed the STRIDE legislation codified as PUA § 4-210, the Commission approved BGE's initial STRIDE plan which allowed the Company to significantly accelerate replacement of outmoded gas pipeline infrastructure under the statute.

We consider BGE's request in the context of our obligation to ratepayers to ensure safe and reliable utility service at just and reasonable rates.[7] In doing so, we prioritize the need to ensure public safety by expediting the replacement of obsolete gas distribution infrastructure, particularly cast iron, bare steel and pre-1970 steel services. For the reasons stated herein, we find that BGE's Application meets the requirements of Section 4-210. We find that the Company's STRIDE 2 Plan will improve the safety and reliability of its gas distribution system. While we decline to approve the Application as

[5] Prepared Direct Testimony of A. Christopher Burton filed December 1, 2017 ("Burton Direct") at 7.
[6] Burton Direct at 7.
[7] *See* PUA §2-113 and §4-201.

proposed which would further accelerate replacement of all five categories over the pace of the initial STRIDE plan, we approve the proposed further acceleration of the pre-1970 ¾" High Pressure Steel Services. We approve the proposed cost recovery surcharge subject to the requirements set forth in Section 4-210 and as provided in this Order. While we recognize that the STRIDE statute represents a departure from traditional ratemaking principles, we believe that the conditions set forth in this Order will protect ratepayers against unreasonable costs by requiring the Company to comply with strict reporting and accountability measures on an annual basis.

Statutory Guidelines

Section 4-210 establishes a mechanism for prompt cost recovery (via a surcharge) for reasonable and prudent eligible gas infrastructure projects, separate from base rate proceedings. An "eligible infrastructure replacement" means a replacement or improvement in existing gas infrastructure made after June 1, 2013, that improves public safety and system reliability, does not increase Company revenues, has the potential to reduce greenhouse gases and is not currently included in rate base.[8] Section 4-210(b) specifies that it is the intent of the General Assembly that the purpose of the statute is to accelerate gas infrastructure improvements in the State. Gas companies are authorized to file a plan to invest in eligible infrastructure replacement projects with an associated cost recovery schedule.[9] The associated surcharge is limited to a maximum of $2 per month for residential customers and is capped pursuant to a formula in § 4-210(c)(4) for non-residential customers. The Commission has discretion to approve a plan if it finds the

[8] Section 4-210 (a)(3).
[9] Section 4-210 (d).

plan is reasonable and prudent and improves public safety or infrastructure reliability.[10] Surcharges can be effective for up to five years, and the gas company must file a base rate application within that five-year period. If the actual cost of a plan is less than the amount collected by the surcharge, customers shall be refunded the difference plus interest.[11]

A. <u>BGE's Request</u>

BGE witness Burton, the Company's Vice President of Gas Distribution, stated that beginning in January 2019 BGE's STRIDE 2 would accelerate replacement of targeted assets even more compared to the currently-approved STRIDE plan.[12] Specifically, the Company proposed it could replace all of the following assets:

- Replace all remaining Cast Iron Main on BGE's system (approximately 1,216 miles);
- Replace all remaining Bare Steel Main on BGE's system (approximately 22 miles);
- Replace all remaining Bare Steel Services on BGE's system. This would entail replacing an estimated 71,849 services or approximately 844 miles of service pipe. and.
- Replace all remaining Copper Services on BGE's system (an estimated 20,251 services or approximately 238 miles of service pipe).
- Replace all remaining Pre-1970 ¾" High Pressure Steel Services on BGE's system (an estimated 37,960 services or approximately 446 miles of service pipe).[13]

[10] Section 4-210 (e)(3); "The Commission *may* approve a plan if it finds that the investments and estimated costs of eligible infrastructure replacement projects are: (i) reasonable and prudent; and (ii) designed to improve public safety or infrastructure reliability over the short term and long term." (emphasis added)
[11] Section 4-210 (g).
[12] Burton Direct at 7-8.
[13] Burton Direct at 8.

BGE has identified these five asset classes within its already existing Distribution Integrity Management Plan ("DIMP"), a plan required under federal law.[14] According to Mr. Burton, the Company has concluded that the asset groups identified for replacement represent among the most outmoded or poorest performing components of the Company's gas distribution system.[15] These assets represented approximately 20% of the Company's total natural gas distribution system mileage at the end of 2016, but accounted for nearly 70% of all gas leaks repairs conducted by the Company in 2016.[16]

According to Figure 4 of Company Exhibit ACB-1 attached to Mr. Burton's testimony, the targeted asset classes in STRIDE 2 make up 20% of the overall material used for the entire BGE distribution system as of 2016.[17]

Main Material	**Percentage of BGE System**
Plastic Services	31.9%
Plastic Main	24.1%
Coated Steel Main	20.6%
Coated Steel Services	3.7%
STRIDE Targeted Assets	19.7%
- Cast Iron Main	*9.0%*
- Pre-1970 ¾" HP Steel Services	*3.3%*
- Bare Steel Services	*5.5%*
- Bare Steel Main	*0.2%*
- Copper Services	*1.8%*

14 Burton Direct at 9.
15 *Id.*
16 *Id.*
17 *Id.*

BGE's sources of leaks at the end of 2016 were as follows:[18]

Service Material	Leak Rate
Bare Steel Services	6.9%
Bare Steel Main	0.3%
Cast Iron Main	28.4%
Copper Services	1.7%
Pre-1970 ¾" HP Steel Services	31.3%
All Other Materials	31.4%

Mr. Burton stated that by targeting these asset classes for replacement, BGE will be able to effectively address the leading causes of leaks on the Company's entire gas distribution system.[19]

Mr. Burton testified that the Company plans to complete the accelerated replacement of the targeted assets through its existing Operation Pipeline and Service Replacement programs ("Operation Pipeline").[20] Mr. Burton stated that BGE's current Operation Pipeline program will be further accelerated under the STRIDE 2 plan to increase the asset replacement rates of targeted mains and services. He noted that the "acceleration of BGE's Operation Pipeline program through the STRIDE 2 plan will establish a replacement rate that effectively eliminates from BGE's gas system all Cast Iron Main by 2037, all Bare Steel Main by 2028, all Bare Steel Services by 2033, and all Copper Services by 2037.[21] The second program under BGE STRIDE 2 plan will be the Service Replacement program which focuses on the replacement of all Pre-1970 ¾"

[18] Burton Direct at 9 citing Company Exhibit ACB-1, Figure 5.
[19] Burton Direct at 9.
[20] *Id.*
[21] Burton Direct at 10.

High Pressure Steel Services.[22] Mr. Burton stated that under STRIDE 2 the replacement rate of Pre-1970 ¾" High Pressure Steel Services will also be accelerated from the Company's current pace under the currently-approved STRIDE plan. Under the STRIDE 2 plan, Pre-1970 ¾" High Pressure Steel Services assets will be eliminated from BGE's gas system by 2021, an acceleration of five years compared to the Company's current STRIDE plan.[23]

Mr. Burton described the effect STRIDE 2 will have on each targeted asset class. *First*, he discussed Cast Iron Main and stated that "all estimated 1,216 miles of Cast Iron Main remaining on BGE's gas distribution system will be replaced." He noted that Cast Iron Main had the highest leak rate among all main materials in 2016, with just over 2.2 leaks per mile.[24] Mr. Burton further indicated that the highest risk for Cast Iron Main is a break in the line, with smaller diameter lines being more prone to breakage than larger line. He also noted that the most frequent failure for Cast Iron Main is a joint leak.[25] The federal Pipeline & Hazardous Materials Safety Administration ("PHMSA"), has identified Cast Iron Main as a priority gas infrastructure asset to be replaced nationwide and BGE's STRIDE 2 plan will establish a pace for complete replacement by 2037.[26]

Second, Mr. Burton discussed the impact of STRIDE 2 on Bare Steel Main. He testified that under STRIDE 2 "all estimated 22 miles of Bare Steel Main remaining on the Company's gas distribution will be replaced.[27] According to Mr. Burton's testimony, Bare Steel Main, which became an industry standard in the 1950s, "is

[22] *Id.*
[23] *Id.*
[24] Burton Direct at 11.
[25] *Id.*.
[26] *Id.*
[27] Burton Direct at 12.

susceptible to corrosion in that it does not have either a protective coating or any cathodic protection system such as those found in newer steel pipelines."[28] Mr. Burton stated that in 2016, BGE's Bare Steel Main experienced a leak rate of over 1.4 leaks per mile, representing the second highest leak rate among main materials on BGE's system. He also noted that PHMSA has identified Bare Steel Main as a priority gas infrastructure asset to be replaced nationwide and therefore under STRIDE 2 this asset class would be replaced by 2028.[29]

Third, according to Mr. Burton, BGE's STRIDE 2 plan includes the replacement of all remaining 71,849 Bare Steel Services on BGE's gas distribution system, inclusive of 7,932 bare steel services that are part of Pre-1970 ¾" High Pressure Steel Services. Mr. Burton noted that Bare Steel Services excluding Pre-1970 ¾" High Pressure Steel Services have similar leak rates as Bare Steel Main with about 0.9 leaks per mile in 2016. Bare Steel Services were also identified by PHMSA as a priority gas infrastructure asset to be replaced. Under STRIDE 2, BGE proposes to establish a pace for replacement of all Bare Steel Services primarily through the Operation Pipeline program by 2033. Additionally, the Pre-1970 ¾" High Pressure Bare Steel Services are proposed for replacement through the Service Replacement Program by 2021.[30]

Fourth, BGE's STRIDE 2 plan also proposes to replace "all estimated remaining 20,251 Copper Services on BGE's gas distribution system."[31] Mr. Burton stated that Copper Services have a leak rate of 0.7 leaks per mile. According Mr. Burton's testimony, "Copper Services failures tend to occur at the junction of the gas main and

[28] *Id.*
[29] Burton Direct at 12.
[30] Burton Direct at 13.
[31] *Id.*

the Copper Service (farther away from the customer premises), rather than at the junction of the Copper Service and the gas meter (closer to the customer premises). Nevertheless these assets still need to be replaced because they are in close proximity to the customer premises and are subject to ongoing corrosion threats."[32] PHMSA has also identified copper piping as a priority gas infrastructure asset to be replaced nationwide, and under STRIDE 2 this asset class will be replaced through the Operation Pipeline program by 2037.[33]

Last, Mr. Burton described in more detail the plans for the Pre-1970 ¾" High Pressure Steel Services. Under the BGE STRIDE 2 plan, "all remaining Pre-1970 ¾" High Pressure Steel Services on the Company's gas system," approximately 37,960 services will be replaced. BGE determined that these assets have a failure rate of about 8% or 6.8 leaks per mile in 2016.[34] Mr. Burton also noted that these assets contribute disproportionately to gas service leaks, as they comprise 7% of all gas services but accounted for 48% of gas service leaks in recent years.[35]

Mr. Burton asserted that the STRIDE 2 plan would improve public safety or infrastructure reliability as required by the statute. Specifically, STRIDE legislation requires that "an eligible infrastructure replacement" be "designed to improve public safety or infrastructure reliability."[36] According to Mr. Burton, "all of the BGE STRIDE-related infrastructure upgrades reduce or eliminate leaks, resulting in a safer gas distribution system."[37] Additionally, he noted that BGE's Operation Pipeline

[32] Burton Direct at 13-14.
[33] Burton Direct at 14.
[34] *Id.*
[35] *Id.*
[36] *Id.*.
[37] Burton Direct at 15.

program incorporates system improvements beyond the elimination of leaks.[38] For instance, the program employs pressure conversions which increase system reliability by upgrading from less reliable, lower pressure systems to more reliable, higher pressure systems. Mr. Burton stated that BGE will install over pressurization protection – another safety benefit related to the work.[39]

Mr. Burton asserted that the infrastructure replacements included in BGE's STRIDE 2 plan provide additional customer benefits as required by the STRIDE legislation.[40] First, the safety and reliability improvements associated with BGE's STRIDE 2 plan represent a customer benefit. Additionally, the reduction in the amount of overall public disruption in a given area by eliminating aging infrastructure through a single project versus returning multiple times to perform incremental replacements of various assets is a benefit.[41] Other benefits include environmental benefits associated with reductions in greenhouse gas emissions and economic benefits associated with new jobs and increased economic activity from the Company's STRIDE 2 plan.[42] Mr. Burton estimated that implementation of its STRIDE 2 plan will support nearly 1,000 full time employees ("FTE") on average, the majority of which will be external contractors hired by the Company to complete the accelerated work.[43]

Company witness Frain, BGE's Director, Regulatory Strategy and Revenue Policy, addressed the projected annual revenue requirement associated with the Company's STRIDE 2 Plan (2019-2023). Mr. Frain also discussed the revenue

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[38] *Id.*
[39] Burton Direct at 15.
[40] Burton Direct at 16.
[41] *Id.*.
[42] *Id.*
[43] Burton Direct at 22.

allocation, rate design, and monthly surcharge associated with the proposed STRIDE 2 plan that would be billed to customers beginning in January 2019. Mr. Frain stated that the STRIDE legislation specifies what should be included in the estimated cost of a project in Section (d)(3)(i) which provides "[w]hen calculating the estimated cost of a project … a gas company shall include: (1) the pretax rate of return on the gas company's investment in the project; (2) depreciation associated with the project, based on new assets less retired plant; and (3) property taxes associated with the project, based on new assets less retired plant."[44]

In addition to those elements, Mr. Frain noted that the STRIDE legislation requires that the pretax rate of return shall use the capital structure and weighted average cost of capital as approved by the Commission in the gas company's most recent base rate case and include an adjustment for bad debt expenses as approved in the most recent base rate case.[45] Mr. Frain assured that, as required by the STRIDE legislation, "all the investments included in BGE's STRIDE 2 plan proposal are non-revenue producing."[46] Mr. Frain also explained the tax treatment assumption underlying the BGE STRIDE 2 plan revenue requirement calculation. He noted that the Internal Revenue Service (IRS) issues guidance regarding the appropriate income tax treatment of repairs made to a natural gas distribution system. The issue addressed in the guidance focuses not on *whether* the costs are deductible for income tax purposes, but rather *when* are the costs deductible for income tax purposes.[47] "To the extent investments are treated like repairs,

[44] Frain Direct at 4.
[45] Frain Direct at 4 referencing PUA §4-201(d)(3)(iii).
[46] Frain Direct at 5. Non-revenue producing investments are investments that are not driven by the addition of new customers to BGE's service territory.
[47] Frain Direct at 6.

they result in an immediate deduction for income tax purposes, which lowers the revenue requirement for customers relative to other income tax treatments for these activities. If these investments are not treated like repairs, the associated depreciation will be deductible over the life of the assets, as is standard for most investments by BGE."[48] Mr. Frain noted that "the STRIDE 2 plan revenue requirements calculations assume that 80% of the expenditures qualify for [the] potential tax [guidance's] repair treatment while the depreciation on the remaining 20% would be treated under normal tax provisions"[49] which is consistent with all BGE's STRIDE filings to date.

Mr. Frain also filed Supplemental Direct Testimony on January 22, 2018 to explain the impact of the Tax Cuts and Jobs Act of 2017 (the "Tax Act" or "TCJA") on the BGE STRIDE 2 revenue requirements and the associated surcharge. The TCJA was signed into law in December 2017 after BGE submitted its STRIDE 2 Application.[50] Mr. Frain noted that "Among other things, the Tax Act reduces the federal corporate tax rate from 35% to 21% as well as eliminates bonus depreciation, which was a provision that allowed a utility to claim a percentage of an asset's basis as "bonus" depreciation in the year the asset is placed in service."[51] Mr. Frain explained that the STRIDE 2 revenue requirements calculation in his Prepared Direct Testimony included estimates for the effect of deferred taxes related to the forecasted STRIDE 2 capital investments. He noted that the deferred tax estimates included: first, a 35% federal corporate income tax rate which was updated to 21% over the entire five year term of the STRIDE 2 plan starting in

[48] Frain Direct at 6-7.
[49] Frain Direct at 7.
[50] Prepared Supplemental Direct Testimony of John C. Frain filed January 22, 2018 ("Frain Supplemental Direct") at 1.
[51] Frain Supplemental Direct at 1.

2019; and second, an assumption that bonus depreciation would be consistent with the previous law and exist in 2019 and then be eliminated. With the TCJA, bonus depreciation is no longer available after 2017. Mr. Frain presented the re-forecasted revenue requirement forecast for each of the Company's STRIDE 2 programs for the five year period 2019-2023 and adjusted for the Tax Act Impact in Table 1 below:

Table 1 – BGE STRIDE 2 Plan Revenue Requirements

BALTIMORE GAS AND ELECTRIC
STRIDE FORECASTED REVENUE REQUIREMENTS
Summary By Program / Year – ($ millions)

	2019	2020	2021	2022	2023
Operation Pipeline	$6.2	$19.8	$36.3	$54.0	$72.1
Service Replacements[1]	$2.5	$7.8	$12.8	$15.2	$15.1
Total Revenue Requirements	**$8.7**	**$27.6**	**$49.1**	**$69.2**	**$87.2**

[1] *Excludes service work performed within the Operation Pipeline program*

Mr. Frain also updated the proposed surcharge rate calculations based on the impact of the TCJA on the STRIDE 2 revenue requirements. "The residential surcharge associated with the proposed STRIDE2 plan is estimated to be $0.79 per customer per month in year one (2019) and then, assuming no base rate cases, the surcharge is estimated to be capped at $2.00 per residential customer per month from 2020-2023. Mr. Frain reiterated that under the proposed STRIDE 2 plan like with the current STRIDE, the customers begin paying the STRIDE surcharge contemporaneous with BGE's gas system infrastructure investments.[52]Company witness Case, BGE's Vice President of

[52] Frain Direct at 6.

Regulatory Policy & Strategy, provided additional information on the Company's STRIDE 2 request including information on how other jurisdictions are dealing with STRIDE-like asset replacement programs and BGE's continued commitment to the robust reporting and review requirements established by the Commission for BGE's current STRIDE plan. Mr. Case noted that the STRIDE 2 plan proposes to further accelerate BGE's gas system infrastructure replacement plan (from completion in 2043 to 2037) and consolidates some existing infrastructure replacement work under common program headings for ease of operations and reporting.[53] He asserted that approving STRIDE 2 is of vital importance because of the work enhances the safety and reliability of BGE's gas distribution system while maintaining environmental and economic benefits. Additionally, he claimed that approving STRIDE 2 aligns Maryland with federal policies on making gas systems safer and more reliable[54] and allows Maryland to keep pace with other states that have prioritized gas infrastructure modernization.[55] Other positive benefits include: that STRIDE 2 estimates employing nearly 1,000 full time workers during the first five years of the approved STRIDE 2 plan, and continued reduction of methane and carbon dioxide greenhouse gases released from BGE's gas distribution system. "BGE estimates that by the time all STRIDE 2 work is completed in 2037, the Company's greenhouse gas emissions will have been reduced by over 190,000 metric tons of carbon dioxide equivalent per year."[56]

[53] Case Direct at 5.
[54] Case Direct at 6.
[55] Case Direct at 7.
[56] Case Direct at 8.

B. Staff's Position

Commission Staff Pipeline Safety Engineer Carlos Acosta assessed BGE's STRIDE 2 plan and concluded that while BGE is seeking approval to replace its outmoded assets at an accelerated pace relative to the proposed pace of it original STRIDE plan, he could not substantiate if it is reasonable to expect a twenty year accelerated replacement rate as proposed in BGE's Stride 2 plan.[57] Mr. Acosta determined that BGE's STRIDE 2 plan meets the requirements of PUA Section 4-210; however, he noted that the plan does not specify the entire project list that BGE will be implementing from 2019 to 2023 if the plan is approved.[58]

Mr. Acosta assessed how well BGE has implemented the original STRIDE plan in relation to what the Company had initially proposed. He noted that the cost for the Company's original STRIDE plan was projected to be $405.3M plus $44M for the amendment requested in 2016, which when combined yields a total of $449.3M.[59] He further stated that the Company has indicated it will spend $523M by the end of the original STRIDE plan, which is $73.7M more than the original projection.[60] Mr. Acosta noted also that according BGE's response to Staff DR01-03, BGE's total expected replacement of mains at the end of 2018 is 172 miles, which indicates that the Company will only have completed 80% of the 213 miles of vintage pipe proposed to be replaced in its original STRIDE filing.[61] With cost overruns and only 80% of miles of main replaced, Mr. Acosta concluded that "BGE ratepayers will have paid more dollars for less

[57] Direct Testimony and Exhibits of Carlos A. Acosta filed February 16, 2018 ("Acosta Direct") at 2.
[58] Acosta Direct at 2-3.
[59] Acosta Direct at 15.
[60] *Id.*
[61] Acosta Direct at 13.

improvement than anticipated including estimates made at the four year mark."[62] Mr. Acosta stated that based on the original projections for the initial BGE STRIDE plan, the Company did not meet it asset replacement goals as projected.[63]

Mr. Acosta assessed the Company's STRIDE 2 Plan and summarized that it included the following:

- 329 miles of cast iron and bare steel mains (321 miles of cast iron and 8 miles of bare steel);
- 21,700 Bare Steel/Copper Services; and
- 27,960 pre 1970 ¾" HP steel services.

As indicated in Mr. Burton's testimony, the Company projected that these replacements will costs approximately $963M. In the STRIDE 2 Plan, the Company is proposing to accelerate the replacement of BGE vintage assets at a pace that would shorten its current replacement program by six years.[64] To achieve its STRIDE 2 goals, Mr. Acosta explains that the Company is proposing to increase the amounts of pipe to be replaced each year from 48 miles per year planned in the original STRIDE plan to approximately 70 miles per year in the proposed STRIDE 2 plan, once the plan is fully ramped up in year 2021.[65] The Company plans to replace the copper and bare steel services replacements at the same pace as the original STRIDE plan but it would increase the pace of the Pre- 1970 ¾" HP steel services from 5,000 to 10,000 services per year until finished in 2021.[66] Mr. Acosta stated that Staff agrees that the Pre- 1970 ¾" HP steel services should be replaced at an accelerated pace because – according to the

[62] Acosta Direct at 16
[63] Acosta Direct at 21.
[64] Acosta Direct at 22.
[65] Acosta Direct at 23.
[66] Acosta Direct at 23.

Company – "48% percent of the gas service leaks are from this asset which represent 7% of all gas services [and] [t]he leak per mile for this asset is the highest, 6.8 leaks per mile to the other assets BGE wants to replace."[67]

Mr. Acosta compared the Original STRIDE Plan and the STRIDE 2 Plan in the table below.[68]

Table 2* – Comparison between the Original STRIDE Plan and the STRIDE 2 Plan Totals[69]

Replacement Asset	Original STRIDE Plan (2014-2018)*	STRIDE 2 Plan (2019-2023)**	Comparison STRIDE 2 Plan to Original STRIDE Plan
Replacement of Bare Steel and Cast Iron Mains	213	329	54%
Pre 1970 3/4" High Pressure Service, Copper, Bare Steel and Plastic Services replaced	44,541	49,660	11%
Full Time Employees (FTEs)	400	1,000	150%

**Mr. Biaggioti's 2013 and Ms. McMullen's 2016 direct testimony.*

After comparing the Original STRIDE plan to BGE's STRIDE 2 plan, Mr. Acosta recommended the following:

- STIRDE 2 should be approved but BGE's plan should be limited to the current STRIDE main replacement pace of approximately 48 miles of main per year and BGE's current STRIDE 1 Amendment rate of 5,000 Pre 1970 ¾" High Pressure Steel Service per year.

[67] Acosta Direct at 24.
[68] Acosta Direct at 30.
[69] Acosta Direct at 30 referencing Table 10.

- BGE should provide more meaningful and detailed information about projections and the calculations of the amount and the costs of the replacement of mains and services in its original STRIDE and its STRIDE 2 plans.

- The Commission should direct BGE to provide details, for each BGE Operation Pipeline ("BOP") project, as to what role each of the targets selection criteria played in determining the projects eligibility for its annual STRIDE Project List filing.

- The Company should clearly define STRIDE 1 and STRIDE 2 as separate plans with separate scope, schedule and budget in order to provide Staff better information to monitor overall plan status against BGE commitments in its original filings.

- The Company should go back to Grade 1 and Grade 2 leaks and agree to leak backlog targets monitored by the Commission.

- The Company should inform the Commission on STRIDE cost/benefit in terms of cost per system-wide leak rate reduction and report the results of achieving those leak rate reductions benefits concurrent with its annual reconciliation … [70]

Staff witness Pobersky, a Commission Senior Public Utility Auditor, reviewed BGE's proposed STRIDE 2 revenue requirement. She recommended that the Commission approve STRIDE 2 Plan consistent with the Mr. Acosta's recommendation of Option 2 put forth by Staff.[71] Specifically, Mrs. Poberesky recommended revenue requirement amounts for the five year period from 2019- 2023 are \$6.6 million in 2019; \$20.7 million in 2020; \$36.2 million in 2021; \$51.6 million in 2022; and \$66.7 million in 2023.[72]

Staff witness Alvarado, the Commission's Director of the Telecommunications, Gas and Water Division, reviewed BGE's proposed STRIDE 2 plan and presented certain policy considerations and support for Staff's overall recommendation as

[70] Acosta Direct at 36-39.
[71] Poberesky Direct at 5.
[72] Poberesky Direct at 7.

described by Mr. Acosta. After reviewing BGE's testimony and the testimony of other Staff witnesses, Mr. Alvarado concluded: that the Commission should approve BGE STRIDE 2 plan subject to the Company maintaining its current replacement pace (according to Staff Witness Acosta's testimony); that establishing the relative cost effectiveness of STRIDE 2 from a public policy perspective is not possible at this time; that the Commission should direct BGE to provide all the information requested in Staff Witness Acosta's testimony; that BGE be required to keep STRIDE 1 and STRIDE 2 separate; that the Commission direct BGE to inform the Commission on the methods it can use to measure system wide risk; and that the Commission explicitly state it reserves the right to conduct a final prudency review on all STRIDE 2 projects during a base rate case.[73]

Staff witness Specht, a Commission Staff Regulatory Economist, reviewed and analyzed the monthly surcharge caps and customer bill impacts associated with BGE's STRIDE 2 plan. Based on BGE's testimony and Mr. Specht's analysis, he concluded that the proposed residential and non-residential monthly surcharge caps and associated surcharges presented by Company witness Frain are calculated in accordance with PUA § 4-210(d0(4). Mr. Specht also noted that the proposed single Class C non-residential monthly surcharge calculations presented in Company witness Frain's Direct testimony result in a widely disparate and inefficient monthly bill impacts to the subclasses in the non-residential customer C Class.[74] Mr. Specht recommended that the Commission direct BGE to separate the C class into subclasses in its next base rate case.[75]

[73] Alvarado Direct at 19.
[74] Specht Direct at 1.
[75] Specht Direct at 12.

C. OPC Position

OPC witness Larkin-Connolly, a Principal with DHInfrastructure LLC, testified regarding BGE's proposed STRIDE 2 Plan and surcharge. He concluded that the STRIDE 2 Plan is not justified and the Company should be directed to submit a new plan that follows the same timeline included in the original STRIDE 1 plan. Mr. Larkin-Connolly compared BGE's STRIDE 2 Plan replacement timeline with that of the timeline of other utilities in its peer group and found that the "Company's current replacement pace is well within the norms in the industry for a utility with high-levels of leak-prone infrastructure."[76] Mr. Larkin-Connolly also performed a cost-benefit analysis on STRIDE 2 and he stated that his analysis found "the faster replacement rate under STRIDE 2 would yield an additional $3.2 million in additional benefit for the 2019-2023 period."[77] He determined that "[t]he faster replacement rate would lead to an additional $75.6 million in revenue requirement over the five-year period, a NPV of $58.8 million."[78] He concluded that the present value to customers for increasing replacement at the rate proposed in STRIDE 2 amounts to a net negative benefit of $56.3 million.[79] Mr. Larkin-Connolly stated that the cost benefit analysis showed "the main beneficiary of the accelerated replacement will be the Company and its shareholders who could see up to $75 million in additional revenue under STRIDE 2."[80]

Mr. Larkin-Connolly reviewed the O&M savings as a result of STRIDE and recommended that an O&M Offset be added to the annual STRIDE surcharge revenue

[76] Larkin-Connolly Direct at 14.
[77] Larkin-Connolly Direct at 20.
[78] Larkin-Connolly Direct at 20.
[79] Larkin-Connolly Direct at 20-21.
[80] Larkin-Connolly Direct at 22.

requirement calculation.[81] He explained that BGE incurs expenses each year to repair main leaks and, as the leak-prone mains are replaced, the O&M repair costs incurred each year decrease. He further noted that the Company has included analysis of these O&M costs savings as part of its required annual audit of STRIDE activities submitted to the Commission in April each year. Mr. Larkin-Connolly argued that since O&M repair expenses are a cost item recovered through base rates then there should be an O&M Offset, a rate adjustment through the STRIDE surcharge, to credit customers with any O&M savings incurred as a result of the STRIDE program.[82]

D. MEG Position

MEG proffered the testimony of two witnesses Gary Lasako and Kurt Krammer. Mr. Lasako, Manager for American Sugar Refining Inc., discussed the concerns of American Sugar and other MEG members that BGE's proposal to continue the STRIDE surcharge would have a significant impact, which cannot be mitigated on American Sugar and MEG members and should be carefully scrutinized by the Commission.[83] Similarly, Mr. Krammer, who is employed at W.R. Grace Company, expressed concern that BGE's STRIDE 2 program does not currently include any replacement of the gas line that services W.R.Grace Curtis Bay facility. Mr. Krammer stated that "the Commission should ensure that costs and benefit of the STRIDE 2 program are allocated proportionately among BGE customers so that Schedule IS and ISS customers like W.R. Grace are not subsiding replacements that do not directly serve them."[84]

[81] Larkin-Connolly Direct at 26.
[82] Larkin-Connolly Direct at 25.
[83] Lasako Direct at 2.
[84] Krammer Direct at 2.

E. BGE's Rebuttal

Addressing concerns raised by Staff, in his rebuttal, Mr. Burton stated that BGE's accelerated plan is advantageous to customers because it will result in a faster conversion to a more reliable and safe gas distribution system with modern materials that adheres to current more stringent federal and state pipeline safety standards.[85] He asserts that BGE STRIDE 2 would remove the "riskiest, most leak-prone assets off of BGE's gas system six years sooner, reducing the potential of a significant gas event that could result in property damage or personal injury."[86] Mr. Burton maintains that contrary to the assertions made by Staff witness Acosta, BGE's STRIDE 1 Plan is not over budget and behind schedule. Mr. Burton noted that Mr. Acosta's analysis was based of the Company's initial estimates from 2013 and did not take into account the subsequent updates to the original plan that had been filed with the Commission.[87] Mr. Burton also disagreed with Mr. Acosta's claim that BGE has not provided sufficient detail on its STRIDE plan project selection and costs. Mr. Burton noted that BGE includes in STRIDE project filings costs and asset replacements, and any expected variances.[88] Mr. Burton also disagrees with Staff witness Alvarado that tracking and measuring system-wide risks, including gas leak reductions will help measure STRIDE cost-effectiveness. Mr. Burton contends that effectiveness of a replacement plan is measured in its ability to remove the targeted assets from the system as quickly as practicable to make the system safer and more reliable.[89]

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[85] Burton Rebuttal at 1.
[86] *Id.*
[87] Burton Rebuttal at 12-15.
[88] Burton Rebuttal 2.
[89] *Id.*

Mr. Burton argues that OPC witness Larkin-Connolly offers a misleading statement that since BGE's leaks and leak rates have declined from 2014 to 2016, acceleration is not warranted.[90] Mr. Burton states that in reality the cast iron leaks are 10% higher since 2013 before the STRIDE work began. Mr. Burton also pointed out that in 2016 BGE had the 4th worst leak rate of the gas utilities selected for OPC witness Larkin-Connolly's analysis.[91]

In his rebuttal testimony, Company witness Case challenged OPC witness Larkin-Connolly's conclusion that BGE's infrastructure replacement timeline aligns with peer utilities. Mr. Case asserts that Mr. Larkin-Connolly's analysis is flawed because it arbitrarily selects a comparison group and fails to acknowledge that certain utilities included in the analysis have since announced a further acceleration of their gas infrastructure replacement plans.[92] Company witness Frain commented that OPC witness Larkin-Connolly's proposal to add an "O&M Offset to Rider 16 is inappropriate as the amount OPC recommends to use as the basis do not represent actual reductions in O&M costs when compared to the level of O&M costs currently included in gas distribution base rates."[93]

II. Commission Decision

Our evaluation of whether to approve BGE's STRIDE 2 Plan proposal begins with a consideration of § 4-210. Pursuant to §4-210(e)(3), the Commission *may* approve a gas infrastructure replacement plan if it finds that the Company's proposed investments

[90] *Id.*
[91] *Id.*
[92] Case Rebuttal at 1.
[93] Frain Rebuttal at 1 and 12-13.

and estimated costs of eligible infrastructure replacement projects are (1) reasonable and prudent, and (2) designed to improve public safety or infrastructure reliability over the short term and long term. We also are guided by the intent of the General Assembly, defined clearly in § 4-210(b), "to accelerate gas infrastructure improvements in the State by establishing a mechanism for gas companies to promptly recover reasonable and prudent costs of investments in eligible infrastructure replacement projects separate from base rate proceedings." Section 4-210(a)(3) defines an "eligible infrastructure replacement" as a replacement or improvement in an existing infrastructure of a gas company that: (1) is made on or after June 1, 2013; (2) is designed to improve public safety or infrastructure reliability; (3) does not increase the revenue of a gas company by connecting an improvement directly to new customers; (4) reduces or has the potential to reduce greenhouse gas emissions through a reduction in natural gas system leaks; and (5) is not included in the current rate base of a gas company as determined in the gas company's most recent base rate proceeding. Additionally, § 4-210(d)(2) requires that an infrastructure replacement plan include: (1) a timeline for the completion of each eligible project; (2) the estimated cost of each project; (3) a description of customer benefits under the plan; and (4) any other information the Commission considers necessary to evaluate the plan.

We find that BGE has satisfied these and other relevant statutory requirements and therefore, we approve BGE's gas infrastructure replacement STRIDE 2 Plan *in part*. The STRIDE 2 Plan would spend approximately $963 million over the five year term. As a result, the statutory cap on the monthly surcharge would be in place for four of the five years, and the amounts spent in excess of that would be sought in a base rate case. If the work goes as planned, all five categories of distribution infrastructure would be replaced by 2037 or sooner, rather than the current projected date of 2043. Both Staff and OPC argue that this degree of additional acceleration does not justify the significant cost of the Plan. When we balance the costs of the STRIDE 2 Plan with the extent of improvement in safety and reliability as required by §4-210(e)(3), we find we cannot approve the STRIDE 2 Plan as proposed. Based on the record, we agree with Staff that BGE has not fully substantiated its need to have an increased rate of acceleration for the targeted assets as compared to the current STRIDE Plan, *except* for the Pre-1970 ¾" High Pressure Steel Services which indisputably has the worst leak rate of the targeted assets. We therefore adopt Staff "Option 2," Mr. Acosta's recommendation that the Commission approve STRIDE 2 at the current STRIDE main replacement pace with approximately 48 miles of main per year for all targeted assets, but accelerate BGE's current STRIDE Amendment rate for Pre-1970 ¾" High Pressure Steel Services to replace them by 2021. We note this is generally similar to the Company's Alternative B set out in its Reply Brief "as an acceptable middle ground."[94]

We shall also require, as Staff requests, that BGE provide Staff with more detailed information regarding the selection criteria and the role each criterion plays in the selection of each STRIDE project and more detailed information regarding the cost of replacement services and mains in future filings, including those remaining for the Company's initial STRIDE plan.[95] We also accept the Company's offer to "meet with

[94] BGE Reply Brief, p. 35.
[95] Staff Initial Brief at 14-15.

Staff and other stakeholders to discuss the quality of the information provided for these filings in an attempt to reach resolution of any data provision issues that are extant."[96]

We also appreciate OPC's analysis for the O&M Offset and while Section 4-210 would not support incorporation of such offset, we believe that a review of the O&M savings associated with STRIDE could be beneficial to the Commission during its examination of O&M costs in a future base rate case. We direct BGE to track its STRIDE related O&M savings so that the parties can verify the Company's estimates thereof. Lastly, while we do not adopt Staff witness Specht's recommendation that would require the Company to separate Schedule C class into subclasses by the next base rate case, we expect that BGE is tracking the metering data for Schedule C and will include an analysis of Staff witness Specht's recommendation in a cost of service study in a future base rate case.

IT IS THEREFORE, this 30th day of May, in the year Two Thousand and Eighteen, by the Public Service Commission of Maryland,

ORDERED: (1) That Baltimore Gas and Electric Company's ("BGE") STRIDE Plan 2 filed December 1, 2017, is approved to proceed at the current STRIDE main replacement pace with 48 miles of main per year for all targeted assets, and accelerate replacement of Pre-1970 ¾" High Pressure Steel Services to replace them by 2021;

(2) That BGE shall notify the Commission within 30 days from today whether it

[96] Staff Initial Brief, p. 15.

accepts this Order, and if it does not, BGE's STRIDE 2 Plan is denied; and

(3) BGE shall file proposed tariffs for its STRIDE 2 surcharge consistent with this Order with an effective date of January 1, 2019.

W. Kevin Hughes

Michael T. Richard

Anthony J. O'Donnell

Odogwu Obi Linton

Mindy L. Herman
Commissioners