



October 15, 2024

VIA ELECTRONIC FILING

Andrew S. Johnston
Executive Secretary
Maryland Public Service Commission
6 Saint Paul Street, 16th Floor
Baltimore Maryland 21202-6806

Re: The Revised 2024–2026 EmPOWER Maryland Program Plans, Case No. 9705

Dear Mr. Johnston:

Attached for filing in the above-referenced case, please find the Maryland Energy Efficiency Advocates' ("MEEA") Comments on the Revised EmPOWER Maryland 2024-2026 Program Plans.

In accordance with the Commission's March 16, 2020, Notice of Waiver and Relaxed Filing Requirements, MEEA will not provide paper copies of this filing. Please contact me if you have any questions. Thank you for your attention to this matter.

Sincerely,

Timothy Oberleiton, Esq.
Earthjustice
1001 G Street NW, Ste. 1000
Washington, D.C. 20001
(202) 793-5820
(202) 667-2356 (fax)
toberleiton@earthjustice.org
On behalf of
Maryland Energy Efficiency Advocates

BEFORE THE PUBLIC SERVICE COMMISSION OF MARYLAND

THE REVISED 2024–2026 EMPOWER
MARYLAND PROGRAM PLANS

CASE NO. 9705

**MARYLAND ENERGY EFFICIENCY ADVOCATES’ COMMENTS ON
EMPOWER MARYLAND 2024-2026 PROGRAM PLANS**

I. BACKGROUND

The Maryland Energy Efficiency Advocates (“MEEA”)¹ appreciates the opportunity to participate and provide comments to the Commission in this proceeding. The enactment of HB 864 introduces a fundamental shift in the focus of EmPOWER, from utility programs that primarily focus on helping customers use energy more efficiently to a multi-faceted suite of programs that take a variety of approaches to reduce the emission of climate-harming greenhouse gases (“GHGs”). EmPOWER may continue to provide energy efficiency to utility customers, but the door is now open for programs that support customers ending their reliance on fossil fuels and instead turning to equipment that relies on electricity. In light of the statutory change, the Maryland Public Service Commission (“PSC” or “Commission”) directed the utilities “to file by August 15, 2024, their revised 2025-2026 program plans consisting at a minimum of the following information:

- 1) For any program the utility is adding – the standard information that would be provided for such a program with an EmPOWER plan filing;

¹ MEEA includes American Council for an Energy-Efficient Economy, CASA, Cedar Lane Unitarian Universalist Environmental Justice Ministry, Center for Progressive Reform, Chesapeake Climate Action Network, Green & Healthy Homes Initiative, Howard County Climate Action, Interfaith Power & Light (DC.MD.NoVa), Maryland Legislative Coalition Climate Justice Wing, Maryland PIRG Foundation, National Consumer Law Center on behalf of its low-income clients, Progressive Maryland, Sierra Club Maryland Chapter

- 2) For any program the utility modifies – an explanation of what the utility changed with revised cost effectiveness, energy savings, GHG savings, and budgets;
- 3) For any program the utility is not changing – an acknowledgment as such with the anticipated cost effectiveness, energy savings, GHG savings, and budget;
- 4) Anticipated costs and bill impacts;
- 5) Anticipated energy savings and GHG savings;
- 6) Cost-effectiveness of the programs; and
- 7) Any other information necessary to demonstrate the revised 2025-2026 program plans comply with the GHG reduction goals and § 7–225(D) of the revised statute.”²

On August 23, 2024, the Commission issued a Notice of Comment Period and Hearings to consider the revised 2024-2026 EmPOWER Maryland plans of The Potomac Edison Company (“PE”), Baltimore Gas and Electric Company (“BGE”), Delmarva Power & Light Company, Potomac Electric Power Company (“Pepco”), Southern Maryland Electric Cooperative, Inc. (“SMECO”), Washington Gas Light Company (“WGL”), and the Maryland Department of Housing and Community Development (“DHCD” or “the Department”). The Notice directed that “[w]ritten comments on the EMPOWER Maryland Plans, semi-annual reports, and other reports shall be filed by October 15, 2024.”³ Accordingly, MEEA respectfully offers these comments and recommendations regarding the utilities’ revised 2024-2026 EmPOWER program plans. MEEA also responds to requests made in DHCD’s 2024 - Q1Q2 Limited Income Semi-Annual Report, and to the EmPOWER Conservation Voltage Reduction Working Group Report, the Status Report

² Case No. 9705, Order No. 91175 at 2, rel. June 4, 2024. ML 310059.

³ Notice of Comment Period and Hearings, at 2, rel. August 23, 2024. ML 311882.

– Findings from Lifecycle Costs Review, and the EmPOWER Lifetime GHG Goal Conversion Report.

II. SUMMARY OF PRINCIPAL RECOMMENDATIONS

Based on its review of the utilities’ and DHCD’s revised Plans, MEEA respectfully recommends the Commission take the following actions, the reasoning behind each of which will be discussed in the following pages. MEEA respectfully urges the Commission not to assume that MEEA either supports or rejects any aspect of a utility’s or DHCD’s revised plan that it does not specifically address in these comments.

1. Approve the revised 2025-2026 Plans of BGE, Delmarva, Pepco, BGE, and SMECO;
2. Develop goals for the next program cycle based on an Estimated Useful Life (“EUL”) that will drive the outcomes the Commission believes are desirable and consistent with the statute. MEEA proposes that goals should be based on an EUL that favors long-lived savings, such as those produced by electrification and comprehensive energy efficiency (“EE”). Establishing larger lifecycle goals based on expected longer average measure lifetimes will favor programs that make larger contributions to meeting the State’s climate objectives.
3. Direct the Exelon utilities to provide more fulsome responses to the directive in Order No. 90957 regarding 15 minute data, including documentation of expected costs and due consideration of the benefits customers could avail themselves of if such data were made available;
4. Direct the utilities to work with stakeholders, including Commission Staff, the Office of People’s Counsel, the Maryland Energy Administration, the Maryland Department of the Environment, DHCD, MEEA, and other parties in an independently-facilitated process to jointly design fully fleshed out building electrification programs that provide equivalent

benefits and opportunities at consistent costs across all five electric EmPOWER service territories;

5. Direct the utilities to maximize their efforts to promote customer participation in their electrification initiatives. Doing so will be a cost-effective approach for achieving the near-term GHG savings goals and will help build the market for sustained customer adoption of electrification measures;
6. Direct the utilities to assess the risks of increased winter energy bills and peak electricity demand that could result from promoting standard heat pumps that rely on electric resistance backup in winter and design heat pump incentives, specifications, and requirements to drive electrification that will provide the lowest bills for customers, mitigate the potential need for increased grid reliability investments, and lead to higher levels of participant satisfaction. MEEA suggests the Commission direct the utilities to implement a requirement that heat pumps must meet the CEE “Path A” criteria to qualify for incentives;
7. Direct the utilities to phase out incentives for central air conditioners and instead focus on the promotion of heat pumps to reduce carbon emissions in both cooling and heating applications;
8. Deny the utilities’ EJ Electrification Adder proposals without prejudice and direct the utilities to work with DHCD to develop protocols through which the environmental justice (“EJ”) incentives can be delivered to DHCD-eligible households by participating in DHCD programs;
9. Direct WGL to phase out rebates for efficient gas equipment, with such rebates terminating no later than December 31, 2025;
10. Direct the utilities to phase out incentives for new homes that use fossil fuel or connect to the gas system, such that only all-electric homes are eligible to receive EmPOWER incentives after December 31, 2025;

11. Reject WGL’s proposed hybrid electrification incentives;
12. Direct WGL to prepare a revised Plan that maximizes non-equipment savings to achieve its statutory savings goals;
13. Encourage DHCD to incorporate electrification wherever appropriate opportunities arise in the course of its work with customers;
14. Adopt the recommendations made in the EmPOWER Conservation Voltage Working Group Report;
15. Consider a more fulsome cost review and benchmarking than was accomplished in the Status Report – Findings from Lifecycle Costs Review, such as the *Benchmarking of Vermont’s 2011 and 2012 Demand Side Management Programs* that was carried out by Navigant for the Vermont Public Service Department;
16. Require the utilities in future filings to separate EE vs. electrification costs so that the Executive Summary (“ES”) tables provide meaningful data on the relative level of investments and benefits provided by electrification.

For the reasons set forth below, MEEA respectfully requests the Commission to consider MEEA’s recommendations and take appropriate action as recommended.

III. COMMENTS REGARDING THE REVISED ELECTRIC UTILITY PLANS

As required, Maryland’s five electric utilities filed revised EmPOWER plans on August 15, 2024, followed by supplemental plan information filings on August 30, 2024. The revised plans are similar to the approved 2024-2026 plans, incorporating many of the same energy efficiency (“EE”) programs and measures that have been part of EmPOWER for many years. For residential customers, these include programs that promote energy efficient appliances; home

retrofit improvements, such as insulation and air sealing, efficient heating, ventilation, and air conditioning (“HVAC”) equipment; and behavioral programs. For commercial and industrial customers, there are prescriptive and custom rebate programs that address a broad range of equipment used in non-residential facilities, as well as programs geared specifically towards small businesses and the efficient operation of buildings and processes. Certain front-of-the-meter (“FTM”) programs—notably Conservation Voltage Reduction (“CVR”) and transformer upgrades—also contribute to EmPOWER savings.

A. Conversion of Approved Plan Savings to GHG Goals

MEEA participated in the EmPOWER Maryland Evaluation Advisory Group meetings and process leading to the filing of the EmPOWER Lifetime GHG Goal Conversion Report (“conversion report”) proposing a process for EmPOWER to convert the kWh savings targets required by the Climate Solutions Now Act to Lifetime GHG Goals for program years 2025 and 2026. MEEA supports the recommendation of the workgroup for the two remaining program years of the current cycle. As the conversion report notes:

The electric utilities filed 2024-2026 plans that met (or slightly exceed) the 2.25% and 2.5% reductions in electricity consumption (and CO₂e emissions) for 2025 and 2026, respectively. The plans contained measure life and other assumptions that were used to calculate and project lifecycle MWh and lifecycle CO₂e impacts.⁴

MEEA believes that using the measure life assumptions from the previously approved 2024-2026 Plans was a reasonable choice for the immediate purpose of translating the kWh savings goals to GHG goals for 2025-2026. However, the result is that the near-term revised Plans are very similar to the previous Plans, including in their over-reliance on short-lived savings from

⁴ EmPOWER Lifetime GHG Goal Conversion Report at 2, ML 310529.

the CVR and Behavior programs. This is not apparent in looking at these programs' contributions towards the calculated GHG goals, because the level of expected savings from the CVR and Behavior programs is embedded in the methodology used to develop the GHG goals. Effectively, the Loper team developed a portfolio-level weighted average estimated useful life ("EUL") based on the approved programs for each utility portfolio and used that average EUL to determine the "equivalent" lifecycle GHG goal.⁵ While the CVR and Behavior programs do not appear to be large contributors to the GHG goal, the extent of their contribution to MWh savings in the approved Plans reduces the magnitude of the GHG goal in the conversion methodology used by the Loper team.

As an example, Figure 1 illustrates the relative contribution that Behavior and CVR make towards BGE's 2025 annual MWh savings. Based on annual MWh savings, CVR and Transformers (shown in light blue at the top of the column) and Smart Energy Manager (Behavior) (shown in dark blue at the bottom of the column) make significant contributions (56% combined) towards the total MWh savings for BGE's 2025 portfolio.

⁵ There is not an explicit or implicit expected portfolio lifetime in HB 864—it is up to the Commission to determine what a reasonable expected lifetime should be in determining how to translate the Climate Solutions Now Act's electric efficiency savings requirements to lifecycle GHG savings.

Figure 1: Relative Contributions Toward Annualized MWh (BGE, 2025)⁶

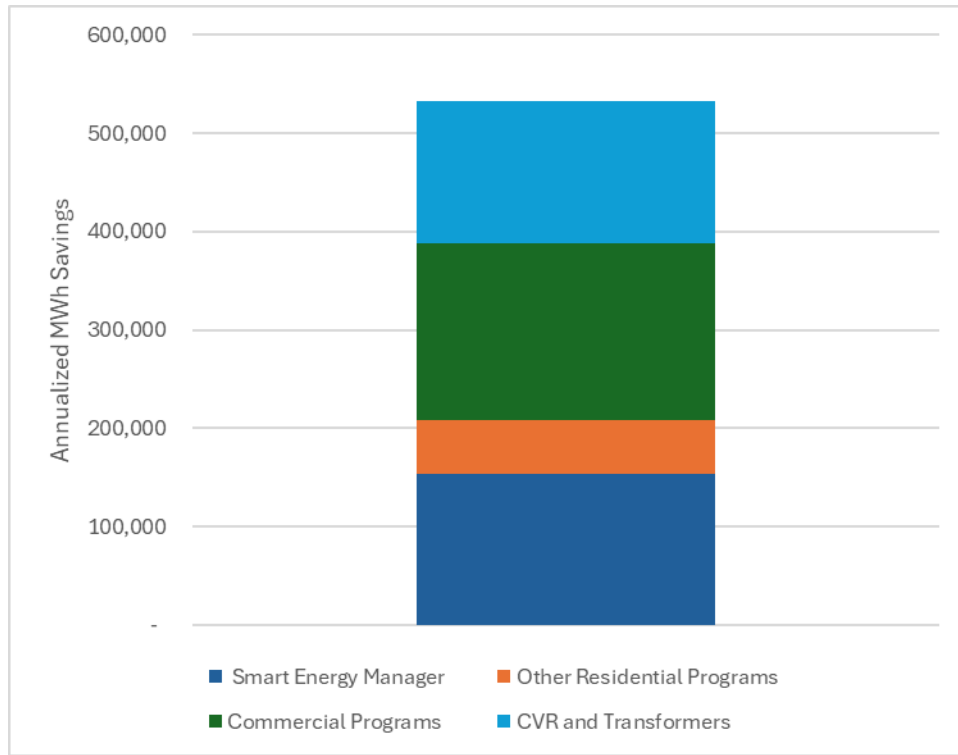
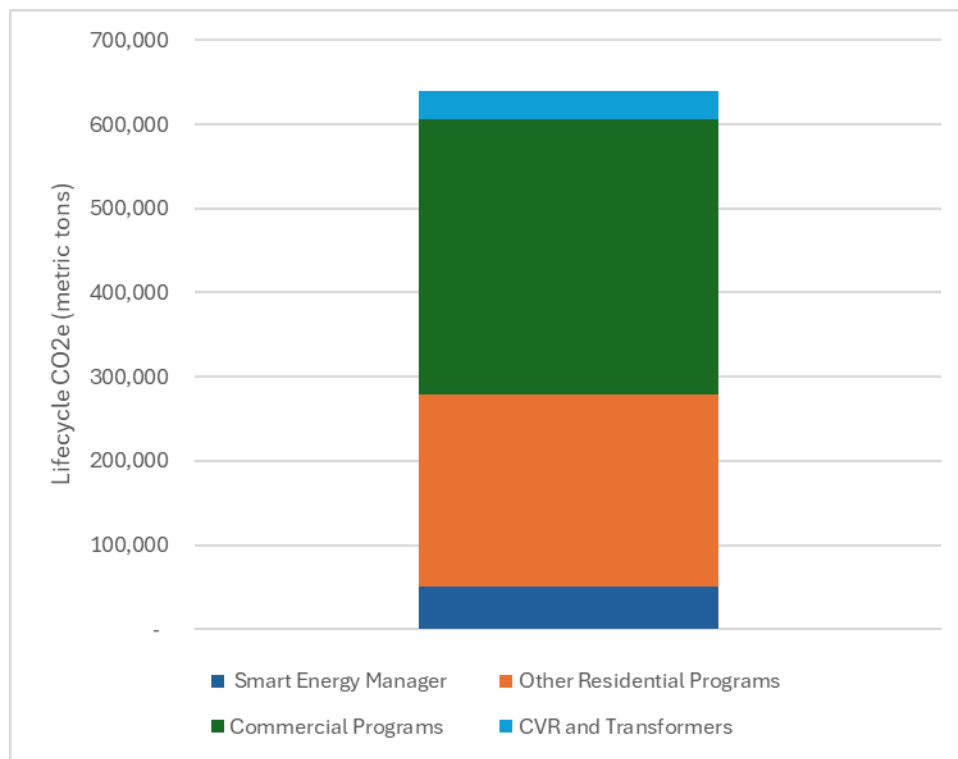


Figure 2 shows the very same CVR and Behavior programs’ contribution to the translated GHG goal. In terms of lifecycle GHG, the contributions from these programs appear to be much less (13% combined), even though they are exactly the same programs with the same savings as represented in Figure 1. Importantly, this shift in the apparent magnitude of Behavior and CVR funding in BGE’s Plan is an effect of the translation of the goals, rather than a decrease in the amount of electricity savings from and funding for CVR and Behavior programs that BGE will pursue. In other words, the EUL embedded in the translation of goals to GHG emission reductions does not currently reflect placement of a greater weight on long-lived measure savings.

⁶ Case No. 9705, Baltimore Gas and Electric Company Revised 2024-2026 EmPOWER Maryland Program Plan, Table ES-1 Net, Revised 08/15/2024, pdf p. 46. ML 311701.

Figure 2: Relative Contributions Toward Lifecycle CO₂e Towards Goal (BGE, 2025)⁷



In MEEA’s view, this is to be expected, given the high degree of reliance the approved Plans placed on CVR and Behavior. Given the challenges that would need to be addressed in trying to effect a major mid-cycle re-working of the Plans on such a tight timeline, it is an acceptable result for the remainder of the 2024-2026 program cycle—but it is not a desirable outcome in the longer run. *MEEA strongly recommends that the Commission develop goals for the next program cycle based on forward-looking policy, rather than on the business-as-usual practices of the EmPOWER programs. The appropriate EUL for future EmPOWER program cycles should not be assumed to be the same value that the Loper team developed for this near-term purpose. Rather, an expected EUL should be developed that will drive the outcomes the*

⁷ Case No. 9705, Baltimore Gas and Electric Company Revised 2024-2026 EmPOWER Maryland Program Plan, Table ES-1 Net, Revised 08/15/2024, pdf p. 46. ML 311701.

Commission believes are desirable and consistent with the statute. MEEA proposes that goals should be based on an EUL that favors long-lived savings, such as those produced by electrification and comprehensive EE. Establishing larger lifecycle goals based on expected longer average measure lifetimes will favor programs that make larger contributions to meeting the State’s climate objectives.

The conversion report appropriately notes that “[t]here are specific issues which will need further discussion and review...[and that] timely consideration of the emissions intensity and other issues...will need to be resolved for goal development beyond 2026.”⁸ MEEA notes that the American Council for an Energy Efficient Economy (“ACEEE”) recently published research on how to properly account for the GHG reductions achieved by energy efficiency.⁹ ACEEE recommends a method that uses capacity expansion and production cost modeling to account for short-run and long-run impacts of energy efficiency. In the event that proves too burdensome, short- and long-run marginal emission rates can be used to evaluate GHG reductions. These approaches should be discussed in development of the 2026–2028 program plans.

Further, MEEA believes the Exelon utilities’ response to Commission Order No. 90957 regarding 15-minute data to be insufficient. BGE reports that

[t]he Maryland Exelon utilities (BGE, Delmarva MD, and Pepco MD) currently provide hourly data via Green Button Connect (GBC). Expanding to provide 15-minute data would be challenging, costly, and require a lengthy series of projects to implement...implementation would require the acquisition of significantly more storage and IT resources.... After careful evaluation of whether any path forward may be possible to provide the requested data, the utilities conclude that it is not realistically feasible or justifiable. Moreover, any

⁸ EmPOWER Lifetime GHG Goal Conversion Report at 2-3, ML 310529.

⁹ ACEEE, *Accounting for Real Change: Policies and Technical Approaches for Reducing Greenhouse Gas Emissions through Efficiency Programs*, September 9, 2024, available at <https://www.aceee.org/research-report/u2401> .

*added benefits are of insufficient value.*¹⁰

The Exelon utilities have not provided any quantification of the costs or benefits of providing these data. Rather they have just provided verbiage expressing their opinion. MEEA's understanding is that expanding from hourly data to 15-minute data requires capturing 4 times as much energy data as the utilities are currently collecting, which constitutes a data increase of 300%, not 800% as claimed. More important than the relative size of the data increase, however, is the absolute size of the data increase. A single hourly energy measure can be stored as an 8-byte floating precision number. Storing a year's worth of those data (8760 hours * 4 data points/hour) for approximately 1 million customers amounts to about a quarter of a terabyte. For context, a 4 TB external hard drive can be purchased on Amazon for a little over \$100. In short, the utilities should have absolutely no problem from a data storage perspective in expanding from hourly accounting to 15-minute accounting.

The Exelon utilities further argue that storing peak demand data would double the storage requirements as compared to only storing energy data. In reality, customer demand data can be derived from customer energy through simple arithmetic (i.e., dividing 15-minute energy data by 0.25), and do not need to be stored to disk. They can trivially be calculated in memory as needed. And even if those data did need to be stored to disk, the total data requirements for 15-minute energy and peak demand would only be about half a terabyte. In short, the Exelon utilities use faulty arithmetic to present misleading arguments about the feasibility of providing 15-minute energy and peak demand data. They incorrectly assert that the computational costs would too high without evaluating any of the benefits of increased data granularity. In reality, research has shown

¹⁰ Case No. 9705, Baltimore Gas and Electric Company Revised 2024-2026 EmPOWER Maryland Program Plan at 33-34. ML 311701.

that additional granularity of energy savings and carbon intensity data can reduce systematic biases that result when attempting to estimate the GHG reductions achieved by virtual of energy efficiency.¹¹

B. Electrification

To a greater or lesser degree, all five of the utilities include new electrification measures and/or programs in their revised Plans. As with the utilities' EE programs, there are similarities across the utilities' electrification program offerings, as well as some differences in program approaches, choice of measures, and program costs. Unfortunately, most of the utilities did not provide a meaningful level of detail in their plans regarding the costs and expected customer participation for their proposed electrification offerings, so to a large degree, these differences are not transparent. Pepco, for example, states that it “believes that 2025 and 2026 can serve as a test-case to gather market intelligence to best structure robust electrification-focused programs in upcoming Program cycles. As such, the Company strategically focused on introducing electrification in this refiling within its already successful HVAC, Home Retrofit and Appliances programs.”¹²

MEEA does not object to this approach, but is troubled that Pepco does not distinguish between the forecasted costs and degrees of participation for its electrification and EE programs in the presentation of its Executive Summary (“ES”) tables. BGE, Delmarva, and SMECO similarly did not include separate lines in their ES tables to distinguish between electrification and EE in their forecasts. However, the Exelon utilities did provide limited data in the Plans that show

¹¹ In addition to the ACEEE report on emissions calculations referenced above, *see e.g.* Miller, *et al.*, *Hourly Accounting on Carbon Emissions from Electricity Consumption*, Environmental Research Letters 17 (4) (2022) available at https://itspubs.ucdavis.edu/publication_detail.php?id=3661.

¹² Potomac Electric Power Company 2025-2026 EmPOWER MD Program Filing at 4. ML 311703.

the relative incentive budgets and expected GHG savings from electrification and EE in the programs that contain both EE and electrification components. For example, Delmarva shows that it plans for a \$2.3 million incentive budget and over 30,000 metric tons in CO₂e savings for electrification and a \$1.1 million incentive budget and 2,000 metric tons in CO₂e savings for EE in its Residential HVAC program. This is illustrated in Table 1, along with the resultant incentive cost per ton of CO₂e. Notably, Delmarva’s data show that incentives for HVAC electrification are roughly seven times less expensive than HVAC EE incentives per metric ton of CO₂e.

Table 1: Delmarva Residential HVAC Program (2025-2026¹³)

	Plan Incentive Budget	Gross Wholesale Lifecycle GHG Savings (metric tons CO ₂ e)	\$ per ton
EE	\$ 1,146,679	2,215	\$ 518
Electrification	\$ 2,354,635	31,968	\$ 74

In its October 16, 2023 comments on the electrification proposal made by the utilities in their original 2024-26 EmPOWER Plans, MEEA stated that it “finds the cost and savings proposals to be almost extraordinarily different across the different utilities, with no apparent basis provided in the Plans to understand why this would be the case.”¹⁴ Unfortunately, it remains hard to determine the extent to which the utilities’ current proposed electrification programs are consistent with one another based solely on the data provided in the revised Plans. Discovery responses provided by several of the utilities indicate that coordination of electrification plans did occur. For example, PE states that, “[a]s required by the Commission, extensive Joint Utility coordination

¹³ Data from Delmarva Power and Light Company 2025-2026 EmPOWER MD Program Filing, Table 2: Electrification Contribution to Residential HVAC Program (2025-2026), p. 11. ML 311702.

¹⁴ MEEA Comments on the EmPOWER Maryland 2024-2026 Program Plans at 59. ML 305644.

took place to develop the ‘up to’ incentive amounts...[t]he amounts proposed in Attachment B-3 were developed with additional Joint Utility coordinat[ion] during development of the Company’s Revised Plan for 2025-2026.”¹⁵ SMECO also notes that “[t]he new incentive maximum amount was determined in coordination with the other EmPOWER utilities as these are set statewide.”¹⁶

However, it is not clear that the coordination regarding “up to” incentive amounts will result in consistent opportunities for Maryland utility customers. MEEA is appreciative of the utilities’ introduction of electrification programs in the Revised plans and supports approval of the utilities’ electrification proposals. However, for the 2027-29 and future cycles, ***MEEA stands by its previous recommendation that***

*the Commission direct the utilities to jointly design building electrification programs that provide equivalent benefits and opportunities at consistent costs across all five electric EmPOWER service territories... so that all customers would have access to equivalent electrification opportunities regardless of which utility provides their electricity.*¹⁷

MEEA further recommends that, in advance of the 2027-2029 EmPOWER cycle Plans being filed, presumably no later than August 1, 2026, the Commission

*direct the utilities to work with stakeholders, including Commission Staff, the Office of People’s Counsel, the Maryland Energy Administration, the Maryland Department of the Environment, DHCD, MEEA, and other parties, to jointly design fully fleshed out building electrification programs that provide equivalent benefits and opportunities at consistent costs across all five electric EmPOWER service territories.*¹⁸

MEEA appreciates that, given the timeline for enactment of HB 864, the utilities were under significant time pressure to update their plans, but ***maintains that the recommendations it***

¹⁵ PE Response to Staff Data Request No. 1-2.a.

¹⁶ SMECO response to Staff Data Request No. 1-4.a.

¹⁷ MEEA Comments on the EmPOWER Maryland 2024-2026 Program Plans at 63-64. ML 305644.

¹⁸ *Id.* at 64.

made a year ago, including that the stakeholder process it recommended for development of electrification programs be independently facilitated, are entirely relevant for the next EmPOWER cycle. Further, given the apparent dramatically lower costs for electrification compared with EE, based on the evidence in Delmarva’s filing, MEEA urges the Commission to direct the utilities to maximize their efforts to promote customer participation in their electrification initiatives. Doing so will be a cost-effective approach for achieving the near-term GHG savings goals and will help build the market for sustained customer adoption of electrification measures.

C. Heat Pump Requirements: Making Sure Early Experience with Electrification is Successful for Participants

The utilities generally have not proposed any criteria for heat pumps in their electrification programs other than efficiency. BGE says, for example:

Heat pumps incentivized under electrification measures will be required to meet the same efficiency thresholds as non-fuel switching heat pumps currently included in the HVAC program. BGE’s proposal does not include restrictions specifying auxiliary systems (i.e., no mandates for cold climate systems vs fuel backup systems vs electric backup systems).¹⁹

Similarly, Pepco states that “all systems will meet minimum efficiency eligibility levels above federal minimum standards. Pepco does not plan to include additional restrictions specifying auxiliary systems.”²⁰ MEEA favors full electrification over hybrid solutions that would require participants to continue to rely on fossil fuel for backup heating in cold weather, and notes that BGE, for example, plans to “provide[] increased incentives for cold climate systems [“ccHP”] to

¹⁹ Case No. 9705, Baltimore Gas and Electric Company Revised 2024-2026 EmPOWER Maryland Program Plan, p. 15. ML 311701.

²⁰ Potomac Electric Power Company 2025-2026 EmPOWER MD Program Filing at 10. ML 311703.

help drive customers to the highest efficiency equipment.”²¹ Unfortunately, BGE further states that it “has not set specific requirements for all equipment to be cold climate to avoid limiting customer choice.”²² This means that customers would be able to receive a rebate for heat pumps that default to electric resistance backup heating in cold weather, creating the potential for unexpectedly large winter heating bills and significantly increased winter peak demands on the grid.

MEEA asked BGE if it had estimated the number of run hours of electric resistance backup heat and magnitude of load for customers who install non-ccHP, to which it replied that it had “modeled savings for these measures using upgrade packages from ResStock, a publicly available dataset available from NREL [that] includes thousands of homes with different characteristics and HVAC loads.”²³ BGE further stated that a “sample of 10 homes was examined for this data request to provide a broad estimate for backup heat run hours. Run hours ranged from 38 to 779 within the 10-home sample, with an average of 433 hours and a standard deviation of 211 hours.”²⁴ Pepco responded similarly, stating that “a sample of 10 homes was pulled to provide a rough range of that runtime. Run hours ranged from 24 to 941 hours within the sample, with an average of 539 hours and a standard deviation of 338 hours.”²⁵

Customers who choose to install standard heat pumps that could rely on significant use of electric resistance backup heating in cold weather will be at risk of greatly increased electric bills,

²¹ BGE Response to MEEA Data Request No. 1-4.b.

²² *Id.*

²³ BGE Response to MEEA Data Request No. 1-4.a.

²⁴ *Id.*

²⁵ Pepco Response to MEEA Data Request No. 1-3.a.

and it is not apparent that the utilities have fully considered this possibility. For example, PE states that it “has not performed” analyses to assess whether customers using heat pumps with electric resistance backup heat risk facing high electricity bills in colder months if their heat pumps default to their electric resistance backup.²⁶ While it has modeled backup heat run hours as noted above, Pepco indicates that it “has not conducted bill impact analysis for these measures [and]...winter energy bills may rise for some customers who choose to electrify within this program.”²⁷

Pepco further explains that, “given that some customers may experience higher bills, the company has proposed increased incentive levels for electrification relative to the non-fuel switching incentives already offered for similar equipment...designed to broadly support electrification’s many challenges, which include, but are not limited to, future bill impacts.”²⁸ In MEEA’s view, it is implausible that increased incentive levels could, in a customer’s mind, compensate for increased future bills. Instead, a higher incentive is simply likely to encourage more participation.

Analyses presented at the recent Summer Study on Energy Efficiency in Buildings hosted by the American Council for an Energy Efficient Economy (“ACEEE”) illustrate the point. For example, one paper focused “on two factors that can lead to dramatically lower overall heat pump system efficiency – namely, 1) improper lockout controls and 2) the use of deep nighttime setbacks.”²⁹ The authors observe that “[d]ucted heat pumps are often able to lock out the

²⁶ PE response to MEEA Data Request No. 1-4.c.

²⁷ Pepco response to MEEA Data Request No. 1-3.b.

²⁸ *Id.*

²⁹ Douglass, Christian and Rushton, Josh: *Getting Heat Pumps Under Control: The Success of the Heat Pump Revolution Requires Getting Heat Pump Controls and Sizing Right* at .pdf p. 2, (2024), available at <https://www.aceee.org/sites/default/files/proceedings/ssb24/pdfs/Getting%20Heat%20Pumps%20Under%20Control%20->

compressor and/or the backup heating source at a particular outdoor air temperature (OAT), by not allowing the backup source to run above a given OAT.”³⁰ However, the authors found that “backup lockouts appear to be rare in the field...[e]ven at [outdoor air temperatures] approaching 60 °F, the electric resistance elements appear to be providing heat at least some of the time.”³¹

While the operation of electric resistance heating backup elements at 40 – 60 degrees F may have negligible impact on winter peak electricity demand, it could certainly result in far lower overall heat pump efficiency and higher bills for customers. These risks can be mitigated by adoption of specifications for lockout temperature settings and other installation requirements, supported by comprehensive installer training and robust inspection protocols to ensure compliance with program requirements. Additionally, the recently adopted Consortium for Energy Efficiency (“CEE”) *Residential Heating and Cooling Systems Initiative Electric Equipment Specifications* includes a “Path A” requirement that heat pumps deliver a coefficient of performance (“COP”) of at least 1.75 (175% efficiency) at 5 degrees F.³² Adoption of the Path A specification for EmPOWER heat pump electrification measures would reduce the risk of unnecessary winter peak load growth due to electrification.

MEEA respectfully urges the Commission to direct the utilities to assess the risks of increased winter energy bills that could result from promoting heat pumps that are reliant on electric resistance backup. Consistent with this recommendation, MEEA urges the Commission

[%20The%20Success%20of%20the%20Heat%20Pump%20Revolution%20Requires%20Getting%20Heat%20Pump%20Controls%20and%20Sizing%20Right.pdf](#).

³⁰ *Id.* at .pdf p. 3.

³¹ *Id.*

³² Consortium for Energy Efficiency, CEE Residential Electrical HVAC Specifications, January 1, 2025, available at <https://ceel.my.site.com/s/resources?id=a0V2R00000sUQby>

to require the utilities to assess the relative increase in demand that could result from promoting standard heat pumps that rely on electric resistance backup in winter. With this information, the utilities should design their heat pump incentives to drive participation in the types of heat pump electrification that will provide the lowest bills for customers, mitigate the potential need for increased grid reliability investments, and thereby lead to higher levels of participant satisfaction.

D. Central Air Conditioner Rebates

The EmPOWER utilities include proposed “up to” incentive amounts for central air conditioners in at least their HVAC and Energy Star for New Homes programs.³³ *MEEA respectfully urges the Commission to direct the utilities to phase out incentives for central air conditioners and instead to focus on the promotion of heat pumps that will reduce carbon emissions in both cooling and heating applications.* Pepco states

*the primary messaging for the [HVAC] program will remain to promote the benefits of energy efficient HVAC equipment, increased energy savings, comfort, as well as raising awareness of the ease and viability of adopting heat pumps in place of new Central Air Conditioners.*³⁴

Phasing out air conditioner incentives would be consistent with this messaging and a focus on electrification while further reducing GHG emissions.

E. Utility Environmental Justice (“EJ”) Electrification Adder Coordination with DHCD

BGE, Pepco, and Delmarva all reference a desire to provide “increased incentives for specific measures – e.g., heat pumps and heat pump water heaters – that directly improve air

³³ See, e.g., Potomac Electric Power Company 2025-2026 EmPOWER MD Program Filing Attachment 2. ML 311703

³⁴ Potomac Electric Power Company 2025-2026 EmPOWER MD Program Filing at 10-11. ML 311703.

quality in EJ communities.”³⁵ MEEA supports the spirit in which these proposals are made and agrees with Pepco that although there will be “overlap between customers who fall within EJ communities and those who qualify for DHCD programs based on income, this overlap will not be 1:1.”³⁶ That said, the amount of overlap has not been assessed, and in MEEA’s view it remains critically important that any utility programs’ overlap with DHCD be managed carefully to ensure that eligible customers receive the maximum benefits they can, and that program services are delivered in a seamless, streamlined manner. The utilities appear to agree with this in principle, but the processes for making this happen need to be developed in a way that prioritizes customers’ needs. With respect to the proposed EJ incentive adder, Delmarva indicates that it “expects coordination to function similarly to the current coordination for existing programs. This includes scheduled monthly meetings to highlight opportunities to reach limited income customers.”³⁷ BGE states similarly that it:

*is committed to collaboration with DHCD’s EmPOWER programs and any electrification plans they propose...Any customer eligible for DHCD’s electrification program will be referred to participate through those channels instead of through BGE’s programming using the processes currently in place for existing energy efficiency offerings.*³⁸

MEEA believes that this is insufficient. The utilities’ responses on EJ coordination differ somewhat from DHCD’s response, which suggests that more planning will be required to successfully implement the EJ incentive adders. DHCD notes that “[n]o specific processes or protocols have been discussed. DHCD believes that BGE customers may not be directed to

³⁵ Case No. 9705, Baltimore Gas and Electric Company Revised 2024-2026 EmPOWER Maryland Program Plan, p.5. ML 311701.

³⁶ Pepco response to MEEA Data Request No. 1-1.b.

³⁷ Delmarva response to MEEA Data Request No. 1-1.c.

³⁸ BGE response to MEEA Data Request No. 1-3.b.ii.

DHCD's programs but rather would be recommended to apply to DHCD's programs, leaving the choice to the customer."³⁹ This is reminiscent of the utilities' proposal to implement low-income programs in the initial Plan filings in 2023. In response to those proposals, MEEA recommended that:

*any approval should be conditional, contingent on the utility first filing a program implementation plan that addresses how the program will ensure that income qualified customers are referred to, rather than diverted from DHCD programs.*⁴⁰

In that proceeding, the Commission denied the utilities' requests, stating that "[t]he utilities may, however, propose their respective programs to DHCD to allow DHCD to first determine whether or not to support the utility's program design, and to confirm that the utility program would not interfere with or detract from DHCD programs."⁴¹ Unfortunately, and perhaps due to the compressed filing schedule, the utilities do not appear to have considered this precedent in proposing the EJ incentives. DHCD indicates that its:

*programs are designed to provide "whole home" assistance. Meaning, DHCD's programs can provide some level of assistance to every eligible household it "touches." ... A participant in DHCD's programs should not have to also participate in a utility program to acquire any benefit...If there is something that a DHCD eligible participant cannot acquire through one of DHCD's programs, then there should be consideration for revising DHCD's programs to offer that benefit.*⁴²

In light of this evidence, ***MEEA recommends the Commission deny the utilities' EJ Electrification Adder proposals without prejudice and direct the utilities to work with DHCD to develop protocols through which the EJ incentives can be delivered to DHCD-eligible***

³⁹ DHCD response to MEEA Data Request No. 1-2.c.

⁴⁰ MEEA Comments on the EmPOWER Maryland 2024-2026 Program Plans at 40. ML 305648.

⁴¹ Order No. 90957 at 63. ML 306928.

⁴² DHCD response to MEEA Data Request No. 1-2.d.

households by participating in DHCD programs.

IV. COMMENTS REGARDING THE REVISED WGL PLAN

In its Supplemental Filing Pursuant to Order No. 90957 regarding the 2024–2026 EmPOWER program cycle (“WGL’s revised Plan”), WGL states:

The primary objective of this filing is to better inform the Commission and EmPOWER stakeholders of Washington Gas’ current and projected capabilities to successfully deploy energy efficiency programs and effectively reduce GHG emissions in accordance with the directives issued through Orders No. 90957 and 91175.⁴³

In MEEA’s view, WGL’s revised Plan might more accurately be described as its attempt to justify its proposals for the ongoing promotion of gas combustion equipment in both new and replacement applications. WGL includes roughly twenty pages in the revised Plan discussing Maryland policy and other considerations that allegedly support its positions, including that “[i]ncentives for high efficiency gas equipment and appliances produce sizeable reductions in GHG emissions and remain one of the most successful, affordable, and cost-effective methods to do so within Maryland’s gas distribution system.”⁴⁴ Indeed, WGL asserts:

There is no evidence within the current body of State policy or recent Commission proceedings that demonstrate incentives for gas equipment contradict the State’s attempt to meet its climate targets nor is there evidence that warrants or justifies their discontinuation.⁴⁵

Unfortunately, in making its case, WGL omits key facts that, if included, would undermine its arguments. Perpetuating the combustion of methane gas in buildings directly undercuts Maryland’s ability to achieve the steep emission reductions required under the Climate Solutions

⁴³ Washington Gas Light Company’s Supplemental Filing Pursuant to Order No. 90957 regarding the 2024–2026 EmPOWER program cycle, p. 4. ML 311729.

⁴⁴ *Id.*

⁴⁵ *Id.* at p. 5.

Now Act. MEEA urges the Commission to reject WGL’s arguments to maintain outdated programs, and instead direct WGL to modify its revised Plan to phase out all incentives and rebates for gas-fired equipment and new homes using gas. The programs proposed by WGL would directly compete with other utilities’ EmPOWER electrification efforts, and thus work against the state’s climate objectives. MEEA further urges the Commission to deny WGL’s ill-conceived proposal to “incorporate hybrid heat pumps into its residential portfolio,”⁴⁶ because such heat pumps will perpetuate reliance on climate-harming methane gas, and are contrary to both the purpose of the Program and the emissions reduction mandates in Maryland.

A. Gas Equipment Incentives

WGL argues that promoting gas equipment yields cost-effective savings for EmPOWER, and “[t]here is no evidence that demonstrates incentives for high efficiency gas equipment and appliances impede or obstruct electrification.”⁴⁷ Yet WGL’s assumption in its cost-effectiveness analyses is that the measures will remain in service for the EUL associated with them⁴⁸—which in the case of gas furnaces, for example, is 21 years. Effectively, WGL’s cost-effectiveness assumption is that a customer who receives a rebate for a new gas furnace will not electrify their heating for at least 21 years—until the furnace reaches the end of its life. This means that the installation of the gas furnace will “impede or obstruct electrification” for at least 21 years. However, should this customer decide to electrify their heating sooner than 21 years have passed, it would mean that the furnace savings—the basis of the claimed cost-effectiveness—would not last for 21 years, with the result that the measure might, in fact, fail to be cost-effective at all.

⁴⁶ *Id.* at p. 8.

⁴⁷ *Id.* at p. 7.

⁴⁸ WGL response to MEEA Data Request No. 1-10.b.

WGL further indicates that “EmPOWER Cost-effectiveness requirements call for measurements at the program level so individual measure cost effectiveness was not calculated.”⁴⁹ In fact, it is MEEA’s understanding that EmPOWER’s long-standing practice has been to assess cost-effectiveness at the sub-portfolio level. However, it might be reasonable to include measures in a program if they are not themselves cost-effective, for example when there is reason to think that promoting them will increase measure adoption and thus improve cost-effectiveness over time. However, such an argument falls flat when considering gas furnace rebates. There are at least two reasons why this is the case.

First, the U.S. Department of Energy (“DOE”) has adopted stringent furnace efficiency standards that will go into effect in 2028. At that time, gas furnaces will, by law, need to have an Annual Fuel Utilization Efficiency (“AFUE”) rating of no less than 95%. When the new standard is in place, the market will be fully transformed; therefore, the potential for WGL’s furnace rebate program to increase efficient furnace adoption would be short-lived at best. After all, there are less than four years left before the standards become effective. However, WGL itself provides significant evidence that the market for high efficiency equipment has already shifted in its service territory. As part of its evaluation, measurement, and verification (“EM&V”) process, WGL’s evaluation vendor conducted a net-to-gross (“NTG”) study for WGL’s gas equipment measures. NTG is a measure of the fraction of customers who receive a program rebate, yet who would have made that efficient purchase anyway, even without the rebate. Guidehouse found that for the Residential Prescriptive Rebate program, the 2022 NTG ratio was 0.41.⁵⁰ This means, effectively,

⁴⁹ WGL response to MEEA Data Request No. 1-2.d.

⁵⁰ WGL Response to MEEA Data Request No. 1-22, Attachment 7 – WGL EmPOWER 2022 Impact Evaluation Report, Table 4-2. Residential Prescriptive Rebates NTG Summary, at p. A-21.

that Guidehouse determined that 6 out of 10 program participants would have purchased efficient equipment even without the program.

These two pieces of evidence suggest that gas equipment incentives provide no value in growing the market for efficient gas equipment—in other words, that ship has already sailed. This means that continued use of ratepayer funds to pay for gas equipment rebates, if based in part on the premise that such promotions will grow demand overall and thus improve cost-effectiveness, is patently wasteful, resulting in increased rates without providing meaningful benefits.

What is more, the measure savings upon which WGL’s claims are based are built on dubious assumptions. For example, WGL indicates that the savings for its high efficiency gas furnace measure relied on the Maryland Technical Resource Manual TRM v11 (“TRM”).⁵¹ To estimate savings for the measure, the TRM uses a baseline of 80% AFUE, which is the current federal minimum efficiency standard. It is a common practice in developing savings estimates to use the minimum efficiency required by law as a baseline, as the Maryland TRM does for the furnace savings. However, it is often the case that the actual market baseline—or the average efficiency of the equipment that is being installed—is higher than the federal minimum. MEEA believes this is very likely to be true in this instance. This is illustrated, for example, by the 2022 EmPOWER Maryland Residential Baseline Study – Final Report, which used survey data “designed to establish a baseline to inform future opportunities for GHG abatement.”⁵² This study found that a “higher share of customers across all building and income types, other than MF LI,

⁵¹ WGL Responses to MEEA Data Request No. 1-2 and 1-8.a.

⁵² EmPOWER Maryland Residential Baseline Study – Final Report, p. 1, December 31, 2022, *available at* <https://verdantassoc.com/deep-dives/empower-maryland-residential-baseline-study/>.

reported having a high efficiency heating system than a non-efficient system.”⁵³ In fact, for single-family non-low income and single-family low income households, the share of customers reporting that they have a high efficiency furnace was between 50%-60%.⁵⁴ This suggests that a substantial portion of customers would be in the position of replacing an older high efficiency furnace when it reaches the end of its life with a newer high efficiency furnace. Such customers are far less likely, in MEEA’s view, to be at risk of reverting to an 80% AFUE furnace at the time of replacement—and this may not be fully captured in WGL’s NTG study.

All of the foregoing economic and technical reasons effectively cut against continued rebates for gas furnaces and other equipment, regardless of WGL’s policy arguments. Such rebates are simply a poor use of ratepayer funds, which is exactly what the Colorado Public Utilities Commission found last year in a case involving Xcel Energy’s Colorado utility:

The Commission notes that a material portion of customers with gas-fired space heating appliances may already utilize high efficiency units in their homes and businesses, since they have been widely available for at least 15 years, meeting or exceeding the typical life cycle of many residential heating units. The Commission finds it appropriate to assume those customers would likely replace their heating appliances with another high efficiency unit, even without utility incentives. Further, we have a good cause to believe the heat pump market will evolve rapidly over the next several years, including the manufacture, distribution, and installation segments of the market. We similarly expect customer comprehension and comfort with the technology to rapidly improve due to the availability of IRA incentives and other factors facilitating market adoption. Accordingly, the Commission finds it necessary to restrict DSM incentives for high efficiency gas-fired space heating equipment to only customers replacing lower efficiency units for the market rate, retrofit portion of Public Service’s DSM activity starting January 1, 2024, and for all incentives for gas heating appliances in this market segment to end by January 1, 2027. Otherwise, we risk incentivizing behavior that would have occurred without incentives and over-counting savings and benefits by assuming lower efficiency units were being removed, even in situations where that is not the case, and no

⁵³ *Id.* at p. 16.

⁵⁴ *Id.*

*savings were actually caused by the Company's rebate.*⁵⁵

MEEA notes and supports that BGE in its revised Plan “does not propose to provide any rebates or incentives for gas combustion equipment in its 2025-2026 EmPOWER programs.”⁵⁶

In light of all this evidence, *MEEA respectfully urges the Commission to direct WGL to phase out rebates for efficient gas equipment, with such rebates terminating no later than December 31, 2025.*

B. Gas in Residential New Construction

MEEA has repeatedly urged the Commission to discontinue EmPOWER incentives for new homes that are connected to gas service. Nevertheless, the utilities' residential new construction programs appear to be unchanged in the revised Plans and continue to anticipate participation of homes that connect to gas service. Such homes would rely on burning fossil fuel for decades or longer, impeding achievement of the GHG emission reductions envisioned in state policy. Owners of new homes that are built with gas will be heavily disinclined to electrify new gas equipment after having recently paid for gas hookups and brand new equipment. And, as MEEA wrote last year, “[f]or both BGE and WGL, between 2018-2021 on average nearly 90% of new residential gas customers connecting to the gas system required new main construction,”⁵⁷ with the result that significant construction costs were incurred that would not have been required for electric-only developments. And as noted in MEEA's EmPOWER comments from last year, the Maryland Commission on Climate Change (“MCCC”) reported:

Studies including E3's Maryland Buildings Decarbonization Study and RMI's The New Economics of Electrifying Buildings add to a body of work

⁵⁵ Public Utilities Commission of the State of Colorado, Proceeding No. 22A-0309EG, Decision No C23-0413 at p.91. https://www.dora.state.co.us/pls/efi/EFI_Search_UI.search.

⁵⁶ BGE Response to MEEA Data Request No. 1-1.a.

⁵⁷ MEEA Comments on the EmPOWER Maryland 2024-2026 Program Plans at 45. ML 305644.

*demonstrating that all-electric new homes have lower construction and energy costs than mixed-fuel homes. This means that all-electric new homes help improve housing affordability and local air quality while reducing greenhouse gas emissions in Maryland.*⁵⁸

Also, as noted previously, Maryland would not be the first jurisdiction to preclude efficiency incentives for homes that use gas. In its decision in the Public Service Company of Colorado’s recent Strategic Issues proceeding, the Colorado Public Utilities Commission stated:

*[I]t seems inconsistent and counter-productive given the full view of policy goals to continue to give any rebates for gas-fired or traditional AC equipment in new construction... since the record in this proceeding clearly indicates that new construction represents the “low hanging fruit” for electrification, with customers facing considerable costs to electrify at a later date, it makes little sense to continue incentivizing programs with gas-fired space or water heating equipment in new construction... we require that the [Energy Star New Homes] program support only all-electric housing by June 30, 2024.*⁵⁹

Accordingly, MEEA respectfully urges the Commission direct the utilities to phase out incentives for new homes that use fossil fuel or connect to the gas system.

C. Hybrid Heating Proposal

WGL proposes offering incentives for electric heat pumps that are installed to displace some, but not all, of the gas used by a gas furnace to heat a home. WGL indicates that:

*Despite engaging in multiple productive discussions, Washington Gas was unable to reach a consensus with the electric EmPOWER utilities on a method to offer hybrid heating systems through the existing Coordinated Program. The coordinated utilities expressed that further utility coordination and Commission guidance is needed to pursue the coordinated program approach for hybrid offerings.*⁶⁰

⁵⁸ MCCC, 2021 Annual Report, Appendix A: Building Energy Transition Plan, at 19 (Nov. 2021), (“MCCC Building Plan”). <https://mde.maryland.gov/programs/air/ClimateChange/MCCC/Documents/2021%20Annual%20Report%20Appendices%20FINAL.pdf>.

⁵⁹ Public Utilities Commission of the State of Colorado, Proceeding No. 22A-0309EG, Decision No C23-0413 at p.92-93. https://www.dora.state.co.us/pls/efi/EFI_Search_UI.search.

⁶⁰ Washington Gas Light Company’s Supplemental Filing Pursuant to Order No. 90957 regarding the 2024–2026 EmPOWER program cycle, p. 9. ML 311729

As a result, WGL “identified an alternative method to propose a hybrid heating system incentive through its existing Residential Prescriptive Program.”⁶¹

MEEA urges the Commission to reject WGL’s hybrid heating system incentive. All the technical flaws in WGL’s equipment rebate program outline above apply to the hybrid proposal as well. Presumably the reason WGL was unable to achieve consensus regarding the coordinated program is that the hybrid approach would be in direct competition with the electric utilities’ electrification programs, which appear to provide highly cost-effective solutions for achieving the GHG abatement goals. What is more, WGL indicates that even though the hybrid initiative is described as being intended to “replace a sizeable part of the heating load of an existing gas-fired heating system, such as an aging furnace or boiler,”⁶² it projects that in some applications, a customer’s existing “furnace with an efficiency level above 80% may still not be able to function as auxiliary heat for an ASHP, [and] in these cases the furnace would need to be replaced with a higher efficiency furnace that is able to function as auxiliary heat for the ASHP.”⁶³ Effectively, this would mean that WGL is proposing to support partial electrification projects that may include rebates for new gas furnaces—but the savings that WGL would claim for any furnace rebates associated with hybrid applications would overstate the gas savings, because the electric heat pump would have already reduced the gas load by a substantial portion.

For the above reasons, MEEA recommends the Commission reject WGL’s proposed hybrid electrification incentives.

⁶¹ *Id.*

⁶² *Id.* at p. 37.

⁶³ WGL Response to MEEA Data Request No. 1-19.a.

D. Where WGL Should Focus its Efforts

WGL posits that “[t]he discontinuation of incentives for high efficiency gas equipment and appliances affords no realistic path for the Company to meet the statutory GHG reduction targets issued through HB 864.”⁶⁴ It further states:

*[T]he only non-gas equipment energy efficiency measure with a long measure life that produces significant amounts of lifetime energy savings are shell measures (weatherization, insulation, etc.). Notably, shell measures are one of the highest cost measures to achieve energy savings. Due to the issues related to coordinated program offerings previously mentioned, the Company sees no realistic path to scale this measure to a level that could compensate for the energy saving performance lost by the discontinuation of incentives for high efficiency gas equipment and appliances.*⁶⁵

MEEA recognizes that WGL, like other gas utilities, relies on equipment measures to comply with savings targets, and eliminating these measures from its portfolio will result in increased costs to achieve statutory requirements. That said, WGL has not provided evidence to show that it cannot achieve its goals without equipment incentives—on the contrary, it has merely argued that it should not be required to do so. ***MEEA recommends the Commission direct WGL to prepare a revised Plan that maximizes non-equipment savings to achieve its statutory savings goals. It is for the Commission—not WGL—to determine if such a revised Plan is in the public interest.***

As outlined above, MEEA contends that the basis of WGL’s equipment measure savings estimates are technically flawed and do not support their continued inclusion in EmPOWER. Gas equipment incentives compete with EmPOWER electrification initiatives and are inconsistent with the overarching climate policy codified in HB 864. ***Eliminating ratepayer-funded programs that***

⁶⁴ Washington Gas Light Company’s Supplemental Filing Pursuant to Order No. 90957 regarding the 2024–2026 EmPOWER program cycle, p. 6. ML 311729

⁶⁵ Washington Gas Light Company’s Supplemental Filing: Additional Plan Information Per Order No. 91252, p. 5. ML 312035.

perpetuate fossil fuel use should, in MEEA’s view, be a priority for EmPOWER. Accordingly, MEEA respectfully urges the Commission to direct the utilities to eliminate these programs.

V. DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT

Unlike the utilities, DHCD was not directed to file a revised Plan for the 2025-2026 program years. It did, however, file an EmPOWER Maryland Limited Income Programs Semi-Annual Report Q1Q2 2024, in which, “[a]s a result of HB864, DHCD is requesting to include electrification for its programs as proposed in its 2024-2026 Program Plan.”⁶⁶ As a modification to its original 2024-2026 Plan, DHCD requests “a revision to the MEEHA measure incentives for funding electrification measures,”⁶⁷ including authorization to:

*increase the maximum funding amount for electrification measures to be equal to like kind replacements. Additionally, the program proposes to add an additional incentive (adder) for electrification measures to encourage projects to install these measures. The proposed electrification incentive amount is a maximum of 10% of the electrification measures’ funding.*⁶⁸

MEEA supports the inclusion of electrification opportunities for limited-income projects, including multifamily homes, and urges the Commission to encourage DHCD to incorporate electrification wherever appropriate opportunities arise in the course of its work with customers. In its 2024-2026 Program Plan, DHCD noted that it “is not planning to perform widespread electrification at this point.”⁶⁹ MEEA agrees that prioritization of comprehensive weatherization work is reasonable in many of the homes that DHCD serves, but urges the Department to build electrification into its suite of comprehensive services, and to not be shy about implementing

⁶⁶ EmPOWER Maryland Limited Income Programs Semi-Annual Report Q1Q2 2024, p. 10. ML 311735.

⁶⁷ DHCD response to MEEA Data Request No. 1-1.a.

⁶⁸ EmPOWER Maryland Limited Income Programs Semi-Annual Report Q1Q2 2024, p. 10. ML 311735.

⁶⁹ DHCD response to MEEA Data Request No. 1-1.a.

electrification projects broadly when they are in customers' best interest. As noted above, MEEA also urges the Commission to provide DHCD with an opportunity to participate in the utilities' proposed EJ incentive program development to ensure that these programs are delivered seamlessly to DHCD participants.

VI. CONSERVATION VOLTAGE REDUCTION WORK GROUP REPORT

As required by the Commission in Order No. 90957,⁷⁰ the EmPOWER Conservation Voltage Working Group Report ("CVR Report") was filed with the Commission on August 1, 2024. The CVR Report responded to three primary questions from the Commission:

- 1) Is the continuation of counting CVR towards EmPOWER goals appropriate?
- 2) What would replace CVR if it was disallowed from EmPOWER goals?
- 3) What are the merits of BGE's request that the 20% cap on FTM sources be lifted, so that they can count all their CVR savings, potentially representing 30% of their MWh goals?

MEEA participated in the working group process and appreciates the discussions and perspectives of all parties. MEEA has raised questions about the appropriateness of CVR savings and the assumed measure life of such savings for many years, and is grateful for the work that has been done to address MEEA's concerns. MEEA agrees with the three recommendations of the CVR Report: specifically, that (1) the CVR impacts in 2024-2026 plans should be counted toward 2024-2026 lifetime GHG goals; (2) the CVR impacts should be excluded from the goal-setting process after the 2024-26 program cycle; and (3) the 80/20 split on BTM and FTM programs should be revisited for the next program cycle. ***MEEA respectfully urges the Commission to adopt these recommendations in its Order in this case.***

⁷⁰ Case No. 9705, Order No. 90957, rel. December 29, 2023. ML No. 306928.

VII. STATUS REPORT – FINDINGS FROM LIFECYCLE COSTS REVIEW

In its comments to the Commission regarding the utilities’ initial 2024-2026 EmPOWER Plans, MEEA noted that “[t]here is little similarity in the utilities’ cost proposals, with the lifecycle costs varying widely within individual program categories and across the residential and non-residential sectors as a whole.”⁷¹ MEEA also noted that “the cost per lifecycle kWh saved proposed by the EmPOWER utilities are all higher than the costs proposed in recent utility plans in other jurisdictions.”⁷² Based on these observations, MEEA recommended that “the Commission direct an independent evaluation for cost benchmarking and best-practices review of the EmPOWER utilities, as compared with one another and with leading utilities nationally, to determine whether the cost proposals provided in the Plans are reasonable and reflective of best practices.”⁷³

In response, the Commission directed “that the EM&V Work Group is to file a status report with the Commission by July 1, 2024, detailing its findings on the inconsistent program modeling and lifecycle costs of the programs presented as identified by MEEA, including any mistakes that are identified and proposed solutions for the mistakes.”⁷⁴ The Status Report – Findings from Lifecycle Costs Review (“Lifecycle Review”) was filed in response to this directive.

MEEA appreciates the Commission’s consideration of its recommendations, as well as the Loper team’s analyses in the Lifecycle Review. The team stated that “[o]verall, the findings identify a few areas of potential concern but also determine that most of the variance among

⁷¹ MEEA Comments on the EmPOWER Maryland 2024-2026 Program Plans at 14. ML 305644.

⁷² *Id.* at 21.

⁷³ *Id.* at 24.

⁷⁴ Order No. 90957 at 86. ML 306928.

program costs are due to the measure mixes within the programs and the accompanying incentives.”⁷⁵ MEEA’s read of the report is that the team identified reasons for the cost variations, but took no position on whether those reasons make sense for Maryland utility customers. The team did not, for example, attempt to examine whether one utility’s program measure mix provided greater benefits relative to its cost than a different measure mix, or whether it could be possible to replicate the less costly measure mix across the utilities. The team also notes that:

*BGE’s custom incentives are much higher than the other utilities and much higher than past program performance. Discussions with BGE suggest that these program plans include a significant increase in participation of customers with large HVAC projects with much higher incentives. These projects will help BGE meet the new EmPOWER goals.*⁷⁶

However, the team makes no attempt to discern whether the “higher incentives” are reasonable or are in line with what is being paid in other jurisdictions. MEEA suggests there are other important questions that should be asked, including the following:

- Should BGE ratepayers be required to pay more towards custom program costs than other utility ratepayers?
- Are those higher incentives required to move the projects forward?
- Are there other programs that could contribute to achieving the GHG goals at a lower cost, such as electrification programs?
- How do the proposed costs compare with other utility costs in other jurisdictions, and to what extent is such benchmarking applicable?

These are just a few examples of the kinds of questions that could be asked regarding the utilities’ cost proposals. It may also be worth considering how efficiently the utilities are running

⁷⁵ Status Report – Findings from Lifecycle Costs Review, p. 3. ML 310655.

⁷⁶ *Id.* at p. 8.

and managing their programs. For example, if one utility has twice as many staff as another utility that is working on an essentially similar program, that could be concerning.

MEEA has a long history of advocating comprehensive energy efficiency programming but continues to be mindful of unanswered questions that could determine whether customers are overpaying for what they receive. Achieving the state's climate goals will be costly; thus, it is critically important that the costs involved are well understood and incurred in a highly efficient manner. *As such, MEEA recommends the Commission consider a more fulsome cost review and benchmarking than the Loper team was directed to do, such as the Benchmarking of Vermont's 2011 and 2012 Demand Side Management Programs report prepared by Navigant for the Vermont Public Service Department.*⁷⁷

Dated: October 15, 2024

Respectfully submitted,

/s/ Timothy R. Oberleiton

Timothy Oberleiton

Earthjustice

1001 G St. NW, Ste. 1000

Washington, DC 20001

toberleiton@earthjustice.org

On behalf of

Maryland Energy Efficiency Advocates

⁷⁷Navigant, Benchmarking of Vermont's 2011 and 2012 Demand Side Management Programs, September 16, 2014, available at https://publicservice.vermont.gov/sites/dps/files/documents/Energy_Efficiency/EVT_Performance_Eval/VT%202011%20%26%202012%20High%20Level%20Benchmarking.pdf.

APPENDIX A

DISCOVERY RESPONSES

Case No. 9705
Baltimore Gas and Electric Company
Revised 2024-2026 EmPOWER MD Program Cycle
BGE Response to MEEA Data Request No. 1
Request Received: August 27, 2024
Response Date: September 11, 2024

Item No. MEEADR1-1:

Refer to the Baltimore Gas and Electric Company Revised 2024-2026 EmPOWER Maryland Program Plan (“Plan”) at p.2: “BGE does not propose herein incentives for equipment that uses natural gas or delivered fossil fuels.”

- a. Confirm that BGE does not propose to provide any rebates or incentives for gas combustion equipment in its 2025-2026 EmPOWER programs. For any answer other than confirm, please list the gas combustion equipment measures for which the Company proposes rebates or incentives, the estimated quantity of each measure, and the amount of each rebate or incentive by measure.
- b. Does BGE currently provide any rebates or incentives for gas combustion equipment in its EmPOWER programs? Please list the gas combustion equipment measures for which the Company currently provides rebates or incentives, the estimated quantity of each measure that will be rebated in 2024, and the amount of each rebate or incentive by measure.
 - i. If yes, please identify the program(s) that provide or propose to provide rebates or incentives for gas combustion equipment.

RESPONSE:

- a. BGE confirms that the Revised Filing does not propose to provide any rebates or incentives for gas combustion equipment in its 2025-2026 EmPOWER programs.
- b. BGE currently provides incentives for Combined Heat and Power (CHP) systems. BGE has proposed to sunset the CHP Program in the Revised Filing with funds remaining only to closeout customer commitments for pre-approved, in-flight projects. BGE currently expects eight potential CHP projects. Incentive amounts are dependent upon equipment specifications and will be determined after project designs are completed.

Case No. 9705
Baltimore Gas and Electric Company
Revised 2024-2026 EmPOWER MD Program Cycle
BGE Response to MEEA Data Request No. 1
Request Received: August 27, 2024
Response Date: September 11, 2024

Item No. MEEADR1-3:

Refer to the Plan at p. 5: “BGE herein proposes increased incentives for specific measures – e.g., heat pumps and heat pump water heaters – that directly improve air quality in EJ communities, as those areas are identified by the state’s “MDE EJ Screening Tool. BGE also proposes dedicated field resources whose sole focus will be on outreach and enrollment of commercial customers located in EJ communities.”

- a. To what extent, if any, has BGE considered whether eligible heat pump and heat pump water heaters in EJ communities would also qualify for DHCD’s EmPOWER programs? Please explain.
- b. BGE states that it “does not conduct focused outreach to limited income customers in its programming and directs these customers to DHCD.” [Plan at 4].
 - i. Please discuss the Company’s efforts to coordinate electrification incentives in EJ communities with DHCD’s programs.
 - ii. Please describe and/or provide any BGE EJ electrification program implementation processes and protocols that have been agreed to by DHCD that will ensure that DHCD-eligible customers will be directed to DHCD’s programs.
- c. Has the Company developed coordination protocols such that DHCD participants in EJ communities will be eligible to seamlessly also participate in BGE’s EJ electrification incentives? Please explain.
- d. Has the Company quantified the impact the proposed EJ initiative would have in improving local air quality in EJ communities? If so, please provide its estimated impacts and any associated workpapers

RESPONSE:

Customers cannot stack BGE incentives with DHCD incentives for the same measure. The increased EJ incentive is added to utility incentives for specific space and water heating measures and is not a standalone measure or program. The EJ incentive is designed to provide an increased incentive to customers ineligible for DHCD’s programs who live in census tracts with an EJ score at or above the 75th percentile according to the MDE EJ Screening Tool.

- a. Customers that live in EJ communities and meet the income requirements for DHCD’s EmPOWER program will be eligible to participate in the heat pump and heat pump water heater incentive measures included in DHCD’s EmPOWER programming. Customers ineligible for DHCD’s EmPOWER programs who live in EJ communities will be eligible to receive heat pump and heat pump water heater

Case No. 9705
Baltimore Gas and Electric Company
Revised 2024-2026 EmPOWER MD Program Cycle
BGE Response to MEEA Data Request No. 1
Request Received: August 27, 2024
Response Date: September 11, 2024

incentives through BGE's EmPOWER program. Customers that are eligible to participate in DHCD's programs will be referred to their programs, as described below.

- b. BGE works closely with its counterparts at DHCD on the design and implementation of EmPOWER programs.
 - i. This coordination occurs in monthly meetings, ad hoc communications, and through participation in working groups. Prior to submission of the Revised Filing, BGE discussed the proposed increased EJ incentive and electrification measures with the DHCD program team. Once electrification measures are approved by the PSC, BGE plans to continue its close coordination with DHCD to ensure all customers are being served. The electrification measures proposed in BGE's Revised Filing were designed to coordinate with both DHCD's EmPOWER programs and the IRA incentives, once their electrification plans are approved and the IRA electrification incentives are developed by MEA.
 - ii. BGE is committed to collaboration with DHCD's EmPOWER programs and any electrification plans they propose. BGE's customer journey for electrification measures will be similar to its energy efficiency program offers and, as such, no electrification-specific processes for referring DHCD-eligible customers have been developed. Any customer eligible for DHCD's electrification program will be referred to participate through those channels instead of through BGE's programming using the processes currently in place for existing energy efficiency offerings. BGE provides education and awareness about DHCD's offerings on program materials and through BGE and DHCD coordinated marketing campaigns. BGE also makes direct referrals to DHCD's programs where appropriate. Customers that may qualify for DHCD programs are asked to go through the DHCD application process before applying to BGE's programs, to verify DHCD program eligibility. BGE also shares customer data with DHCD for potential program participation in certain circumstances, such as if customers who are on bill assistance have above average winter energy usage.
- c. Customers will not be eligible to receive both a DHCD electrification incentive and a BGE electrification EJ incentive for the same measure. Customers will be eligible for one or the other per measure/project, but not both. As proposed in the Revised Filing, the receipt of the increased EJ incentive is predicated on eligibility for a heat pump or heat pump water heater incentive through BGE's market rate EmPOWER

Case No. 9705
Baltimore Gas and Electric Company
Revised 2024-2026 EmPOWER MD Program Cycle
BGE Response to MEEA Data Request No. 1
Request Received: August 27, 2024
Response Date: September 11, 2024

programs. If a customer receives an incentive for a heat pump or heat pump water heater through DHCD's EmPOWER programs, they would not be eligible to receive an incentive for that same measure through BGE's programs.

- d. BGE has not quantified the full impact that the proposed EJ initiative would have in improving local air quality in EJ communities. The impact of the incentive is highly dependent on volume of program participation which is uncertain because this is a new incentive. Benefits may also vary based on the specific conditions of each building.

Case No. 9705
Baltimore Gas and Electric Company
Revised 2024-2026 EmPOWER MD Program Cycle
BGE Response to MEEA Data Request No. 1
Request Received: August 27, 2024
Response Date: September 11, 2024

Item No. MEEADR1-4:

Refer to the Plan at p. 15: “Heat pumps incentivized under electrification measures will be required to meet the same efficiency thresholds as non-fuel switching heat pumps currently included in the HVAC program. BGE’s proposal does not include restrictions specifying auxiliary systems (i.e., no mandates for cold climate systems vs fuel backup systems vs electric backup systems).”

- a. Has the Company estimated the number of run hours of electric resistance backup heat and magnitude of load for customers who install non-ccHP?
 - i. Please describe any analyses done by the Company on the potential for demand to increase if customers adopt non-cold climate HPs with electric resistance backup heat.
- b. Has the Company considered the energy costs for beneficial electrification customers who install non-cold climate HPs with electric resistance backup heat? Specifically, do customers with heat pumps with electric resistance backup heat risk high electricity bills in colder months if the heat pump defaults to electric resistance backup?
 - i. Please describe any analyses conducted by the Company and provide the Company’s findings and conclusions.
- c. How will BGE address customer communications regarding the potential for customers who install non-ccHP to experience high winter electric bills?
 - i. Regardless of whether it provides incentives for gas furnaces, will BGE suggest dual fuel systems, i.e. heat pumps with gas furnace backup, to mitigate the risk of high winter electric bills?
 - ii. Will the Company inform customers of the risks of high winter electric bills if they rely on heat pumps with electric resistance backup?
- d. If customers experience high winter electric bills after installing heat pumps, does the Company believe this would strengthen the market of heat pumps generally?

RESPONSE:

- a. BGE modeled savings for these measures using upgrade packages from ResStock, a publicly available dataset available from NREL.¹ This dataset includes thousands of homes with different characteristics and HVAC loads. Accordingly, it is not possible to provide a singular modeled run hours for backup electric heating. However, a sample of 10 homes was examined for this data request to provide a broad estimate for backup heat run hours. Run hours ranged from 38 to 779 within the 10-home sample, with an average of 433 hours

¹ <https://resstock.nrel.gov/>

Case No. 9705
Baltimore Gas and Electric Company
Revised 2024-2026 EmPOWER MD Program Cycle
BGE Response to MEEA Data Request No. 1
Request Received: August 27, 2024
Response Date: September 11, 2024

and a standard deviation of 211 hours. This large variation underscores the significant variation within the territory's housing stock.

- i. All customers that convert from fossil fuel winter heating sources to electric heat pumps are expected to experience increased winter electricity demand. For non-cold climate HPs with electric resistance backup heat, BGE has modeled average winter demand increases of 7.4 – 11.9 kW per system. These are based on averages across the Maryland housing stock using NREL's ResStock datasets and thus represent an average of various housing sizes, vintages, insulation levels, etc.
- b. Bill impact analysis has not been completed for these measures. However, there are likely to be some customers and housing situations where winter energy bills rise after space heating electrification. The choice of cold climate vs non-cold climate heat pumps and customer decisions about backup heating equipment may impact those bill outcomes, but they represent one of many factors. Other important factors include existing system type and efficiency, levels of home air sealing and insulation, and fluctuating prices for electricity, natural gas, and delivered fuels. BGE has proposed significantly higher incentives for electrification offerings in recognition of the cost considerations for heat pumps, which include both increased upfront costs and potential bill impacts in the future. These increased incentives are designed to broadly offset those incremental costs and related bill impact risks. The HVAC program also provides increased incentives for cold climate systems to help drive customers to the highest efficiency equipment but has not set specific requirements for all equipment to be cold climate to avoid limiting customer choice.
- c. BGE has not developed messaging on this topic, as bill impacts are highly dependent on the characteristics of each electrification project and blanket messaging risks not taking into account nuances between customers. The Company believes that contractors are best equipped to discuss bill impacts and other equipment-specific decision factors directly with customers, as they have a more holistic understanding of each individual project, customer budget considerations, and other relevant market factors like current equipment availability. To ensure that customers and contractors understand the ways that electrification may impact winter electric bills, BGE plans to provide educational materials to contractors to ensure they are informed about potential bill risks and are trained in energy efficiency and electrification technologies.
 - i. The Company is supportive of customer choice and customization in its electrification efforts, with the goal of increasing customer adoption of heat pump equipment. Contractors will suggest systems that work best for the customer based on their individual needs and home conditions.

Case No. 9705
Baltimore Gas and Electric Company
Revised 2024-2026 EmPOWER MD Program Cycle
BGE Response to MEEA Data Request No. 1
Request Received: August 27, 2024
Response Date: September 11, 2024

- ii. BGE has not yet developed a communications strategy but believes that contractors are best equipped to offer advice on specific equipment performance and bill impacts based on each customer's home and specific circumstances. BGE plans to develop educational materials for contractors that address potential bill risks related to space and water heating measures in the course of this EmPOWER cycle, but a customer's overall bill impact is based upon multiple factors including those outside of the installation of these measures.

- d. BGE does not have access to information that would fully address this question. The heat pump market is complex and rapidly changing and the Company has not conducted an analysis on how high winter electric bills would impact this market. Winter peak cost is only one aspect of the full cost of ownership, as there are other factors involved.. Overall, BGE believes that the robust incentives proposed across its electrification offerings will contribute to a strengthening of the heat pump market and will act as a catalyst for broader market transformation. The complex variety of design configuration options for heat pump systems is best addressed through the contractor interface, as they will have the most robust set of information with which to explain options for customers based upon their specific homes. More efficient or complex solutions may reduce operational costs but could incur additional installation costs. Other services like weatherization can also mitigate the impact of resistance heat usage while providing additional comfort, health, and efficiency benefits.

RESPONSES

Request No. 1: Please refer to the EmPOWER Maryland Limited Income Programs Semi-Annual Report Q1 Q2 2024 (“Report”) at p.10: “As a result of HB864, DHCD is requesting to include electrification for its programs as proposed in its 2024-2026 Program Plan with some modifications as described below.”

a. Please provide or reproduce the specific requests “for its programs as proposed in its 2024-2026 Program Plan” that DHCD is requesting approval for in the Report.

DHCD Response: Please see references, below, to the respective requests from the 2024-2026 Plan :

- Table – 1, “Overview of Program Modifications to Comprehensive Core Programs,” states: “Allow fuel switching for beneficial electrification.”
- Table - 9, “Portfolio Design Process,” Section – 4, “Adjust Parameters,” states: “Electrification provides only minimal incremental electric savings at high costs. Due to its savings target being electric, and being sensitive about ratepayer costs, DHCD is not planning to perform widespread electrification at this point.”
- Modification 3.A, “Reduce funding for gas appliances,” identifies DHCD’s strategy for reducing incentives for gas appliances, including the recording of households that contain unreplaced gas appliances, pre-assessment for electrification potential, and electrification of these households in the future when electrification becomes supported by program targets, or referral of them to electrification programs.
- Modification 3.B, “Allow fuel switching towards electrification on a case-by-case-basis,” can be found on page 25 of the Plan and states, in part “DHCD is requesting the ability to perform fuel switching on a case by case basis. For Whole Home Efficiency projects, DHCD will consider fuel switching in cases when the electrification is cost-effective based on a modeled SIR, and if it can be performed within the existing

incentive structure. For MEEHA projects, DHCD will consider funding electrification measures at a reduced incentive.”

- However, DHCD is also requesting, through the Q1-Q2 2024 Report, a revision to the MEEHA measure incentives for funding electrification measures.

Request No. 2: The Baltimore Gas and Electric Company Revised 2024-2026 EmPOWER Maryland Program Plan (“BGE Plan”) says at p. 5: “BGE herein proposes increased incentives for specific measures – e.g., heat pumps and heat pump water heaters – that directly improve air quality in EJ communities, as those areas are identified by the state’s ‘MDE EJ Screening Tool’. BGE also proposes dedicated field resources whose sole focus will be on outreach and enrollment of commercial customers located in EJ communities.” The BGE Plan also says at p. 9: “Customers within census tracts at or above the 75th percentile (total EJ Score) in MDE’s Tool will be eligible for an increased incentive for space and water heating measures such as heat pumps and heat pump water heaters through the residential programs described in this filing.”

- a. **To what extent, if any, has DHCD assessed whether “Customers within census tracts at or above the 75th percentile (total EJ Score) in MDE’s Tool” would also qualify for DHCD’s EmPOWER programs? Please explain.**

DHCD Response: DHCD’s assumption is that there are customers in those census tracts that would also be eligible for DHCD’s EmPOWER programs since DHCD uses the 90% EJ score threshold, which is above 75%. However, no specific analysis has been done.

- b. **Please discuss BGE’s efforts to coordinate electrification incentives in EJ communities with DHCD’s programs.**

DHCD Response: No specific strategies have been discussed, other than that if BGE were to identify a customer as being eligible for DHCD’s programs, BGE would refer the customer to DHCD.

- c. **Please describe and/or provide any BGE EJ electrification program implementation processes and protocols that have been agreed to by**

DHCD that will ensure that DHCD-eligible customers will be directed to DHCD's programs.

DHCD Response: No specific processes or protocols have been discussed. DHCD believes that BGE customers may not be directed to DHCD's programs but rather would be recommended to apply to DHCD's programs, leaving the choice to the customer.

d. Has DHCD developed coordination protocols such that DHCD participants in EJ communities will be eligible to seamlessly also participate in BGE's EJ electrification incentives? Please explain.

DHCD Response: DHCD's programs are designed to provide "whole home" assistance. Meaning, DHCD's programs can provide some level of assistance to every eligible household it "touches." The programs are also designed so that specific measures are not installed where the installation of that measure may cause harm to the building or its occupants, based on building science principles. A participant in DHCD's programs should not have to also participate in a utility program to acquire any benefit, except in a case where the participant is recycling equipment that was not replaced by one of DHCD's programs. If there is something that a DHCD eligible participant cannot acquire through one of DHCD's programs, then there should be consideration for revising DHCD's programs to offer that benefit.

Request No. 3: Please also respond to the questions above with respect to Pepco and Delmarva, both of which also propose in their revised plans to offer increased electrification incentives in EJ communities.

DHCD Response to (a): DHCD's assumption is that there are customers in those census tracts that would also be eligible for DHCD's EmPOWER programs since DHCD uses the 90% EJ score threshold, which is above 75%. However, no specific analysis has been done.

DHCD Response to (b): No specific strategies have been discussed yet.


DHCD Response to (c): No specific processes or protocols have been discussed yet.

DHCD Response to (d): DHCD's programs are designed to provide "whole home" assistance. Meaning, DHCD's programs can provide some level of assistance to every eligible household it "touches". The programs are also designed so that specific measures aren't installed where the installation of that measure may cause harm to the building or its occupants based on building science principles. A participant in DHCD's programs should not have to also participate in a utility program to acquire any benefit, except in a case where the participant is recycling equipment that was not replaced by one of DHCD's programs. If there is something that a DHCD eligible participant cannot acquire through one of DHCD's programs, then there

Respectfully Submitted,

ANTHONY G. BROWN
Attorney General of Maryland

Date: September 11, 2024

By: 

Amy C. H. Grasso
Deputy Counsel
Assistant Attorney General
7800 Harkins Road, Rm. 465
Lanham, MD 20706
301-429-7475
240-266-3027 (facsimile)
amy.grasso@maryland.gov
*Attorneys for the Department of
Housing and Community Development*

DELMARVA POWER & LIGHT COMPANY
MARYLAND CASE NO. 9705
EMPOWER MD
RESPONSE TO MEEA DATA REQUEST NO. 1

QUESTION NO. 1

Refer to the Delmarva Power and Light Company (“Delmarva” or “Company”) 2025-2026 EmPOWER MD Program Filing (“Plan”) at p. 4: “the Company will seek to include additional Environmental Justice (“EJ”) incentives for electrification projects completed in underserved and overburdened communities.”

- a. To what extent, if any, has Delmarva considered whether eligible heat pump and heat pump water heaters in EJ communities would also qualify for DHCD’s EmPOWER programs? Please explain.
- b. Please discuss the Company’s efforts to coordinate electrification incentives in EJ communities with DHCD’s programs.
- c. Please describe and/or provide any Delmarva EJ electrification program implementation processes and protocols that have been agreed to by DHCD that will ensure that DHCD-eligible customers will be directed to DHCD’s programs.
- d. Has the Company developed coordination protocols such that DHCD participants in EJ communities will be eligible to seamlessly also participate in Delmarva’s EJ electrification incentives? Please explain.
- e. Has the Company quantified the impact the proposed EJ initiative would have in improving local air quality in EJ communities? If so, please provide its estimated impacts and any associated workpapers.

RESPONSE:

- a. For heat pump equipment, the Company believes that it is important to prevent customer “double dipping” and does not intend for customers to be able to receive an EJ bonus incentive for a piece of equipment that was also incentivized by DHCD. The EJ incentive is intended only for equipment incentivized by Delmarva Power. The Company is committed to working closely with DHCD to ensure that there are processes to prevent these occurrences. As stated previously, Delmarva Power has experience with this level of coordination for other non-electrification EmPOWER programs. For a more detailed discussion please see MEEA DR 1-1(b).
- a. The Company does not intend to disrupt the current coordination between utility and DHCD programs.

- b. The Environmental Justice Screening Tool developed by the Maryland Department of the Environment considers many factors beyond income.¹ Customers within communities that qualify as overburdened based on the EJ Screening Tool and are eligible for DHCD programs will be referred to DHCD programs in the same manner as the current programs.

b.

It should be noted that although Delmarva Power expects there to be overlap between customers who fall within EJ communities and those who qualify for DHCD programs based on income, this overlap will not be 1:1.

Accordingly, Delmarva Power does not believe that there is an inherent conflict in focusing on these broader environmental factors to facilitate an equitable energy transition.

Further discussions of coordination may also be had in the relevant working groups where broader coordination may be necessary, including with future IRA electrification programs administered by MEA. Finally, Delmarva Power expects to further develop statewide coordination with DHCD in the course of the standing monthly calls between the joint utilities and DHCD, where Delmarva Power expects electrification coordination will be an area of significant discussion.

- c. Delmarva Power expects coordination to function similarly to the current coordination for existing programs. This includes scheduled monthly meetings to highlight opportunities to reach limited income customers. In addition, Delmarva Power plans to continue to actively promote DHCD programs through its marketing materials and at community events.

Specific protocols for electrification programs have not been determined as the details of DHCD's electrification offerings have not yet been shared with Delmarva.

- d. Delmarva Power's EJ bonus for electrification were designed only for customers who receive a Delmarva Power electrification incentive and were not intended for customers to be able to "double dip" with DHCD incentives for the same equipment. Therefore, customers eligible for DHCD programs would be directed to DHCD in a similar manner as currently occurs in the territory. The proposed EJ electrification incentives are designed to be an adder on top of larger equipment incentives and are not intended to stack by themselves with DHCD equipment incentives. Please see MEEA DR 1-1(b) for more detail on intended coordination with DHCD on these issues.

¹ MDE uses four factors to calculate the EJ scores, which are: (1) pollution burden exposure; (2) Pollution burden environmental effects; (3) Sensitive populations; and (4) Socioeconomic/demographic indicators. *See also* https://mde.maryland.gov/Environmental_Justice/Pages/EJ-Screening-Tool.aspx.

e. This analysis was not performed.

SPONSOR: The Company

**Response of The Potomac Edison Company to Discovery Request
MD Energy Efficiency and Peak Demand Reduction Revised Plan Proceeding PY 2025-2026
Maryland Public Service Commission Case No. 9705**

Discovery request submitted by: Maryland Energy Efficiency Advocates

Discovery request set number: 1-4

Response prepared by or under the direction of: Edward Miller

Response date: September 9, 2024

MEEA DR 1-4: In the Company’s Plan are heat pump efficiency and performance criteria the same, regardless of which program the customer is participating in?

- a. Are heat pump efficiency and performance criteria the same for beneficial electrification projects and heat pump replacement projects? Please explain and provide heat pump efficiency and performance criteria for each program where incentives are available.
- b. Has the Company estimated the number of run hours of electric resistance backup heat and magnitude of load for customers who install standard heat pumps (i.e. heat pumps that are not specified as cold-climate heat pumps or ccHP)?
 - i. Please describe any analyses done by the Company on the potential for electricity demand to increase if customers adopt non-cold climate HPs that have electric resistance backup heat.
- c. Has the Company considered the energy costs for beneficial electrification customers who install non-cold climate HPs with electric resistance backup heat? Specifically, do customers with heat pumps with electric resistance backup heat risk high electricity bills in colder months if the heat pump defaults to electric resistance backup? Please explain.
 - i. Please describe any analyses conducted by the Company and provide the Company’s findings and conclusions.
- d. How will PE address customer communications regarding the potential for customers who install non-ccHP to experience high winter electric bills?
 - i. Regardless of whether it provides incentives for gas furnaces, will PE suggest dual fuel systems, i.e. heat pumps with gas furnace backup, to mitigate the risk of high winter electric bills?
 - ii. Will the Company inform customers of the risks of high winter electric bills if they rely on heat pumps with electric resistance backup?
- e. If customers experience high winter electric bills after installing heat pumps, does the Company believe this would strengthen the market of heat pumps generally?

Response

- a. Yes, see the Company’s 24-26 Revised Plan, Attachment E-3 – Measure Eligibility for eligibility requirements of all measures. Specifically see the Program - Home Retrofit, Sub-Program - HVAC and Measures – Heat Pump Air Source – Eff and Heat Pump Air Source - Most Eff with replacement eligibility of “ENERGY STAR, MD TRM or

**Response of The Potomac Edison Company to Discovery Request
MD Energy Efficiency and Peak Demand Reduction Revised Plan Proceeding PY 2025-2026
Maryland Public Service Commission Case No. 9705**

Program Specification” plus Heat Pump Cold Climate -Eff with replacement eligibility of “ENERGY STAR or Program Specification”. Additionally see the Program - Home Retrofit, Sub-Program - HVAC and Measures FF Frnc to ASHP with electrification eligibility of “ENERGY STAR, MD TRM or Program Specification heat pump replacing a fossil fuel furnace”. The Joint Utilities will develop a consensus program specification upon Commission approval of the Revised Plans. The Company anticipates that the electrification and replacement efficiency levels for heat pumps will be the same.

- b. The Company has not performed this analysis. .
 - i. N/A.
- c. See the response to subpart b. The Company has not performed this analysis.
- d. The Company’s 24-26 Revised Plan anticipates 100% removal of the fossil fuel appliance to maximize the lifecycle GHG savings. The Company plans to develop specific call center scripts, contractor training, marketing and project application language to educate and inform contractors and customers on the benefits and expected changes to their fossil fuel and electric bills, including seasonal expectations.
 - i. The Company does not plan to suggest dual fuel systems.
 - ii. See response to subpart d above.
- e. The Company believes increased electric bills and negative perceptions can be mitigated through pre-project education and engaged call center scripts including customer education on total energy bills considering the removal of fossil fuel expenses.

**Response of The Potomac Edison Company to Discovery Request
MD Energy Efficiency and Peak Demand Reduction Revised Plan Proceeding PY 2025-2026
Maryland Public Service Commission Case No. 9705**

Discovery request submitted by: Staff

Discovery request set number: 1-2

Response prepared by or under the direction of: Edward Miller

Response date: September 24, 2024

STAFF DR 1-2: Attachment B-1 of the revised filing states the incentive maximum amount for heat pump water heaters is \$2,500 under the energy efficient products and home retrofit programs on page 1 of the attachment. On page 2 of the attachment the incentive amount is stated as up to \$1,500 for the Energy Star program. Attachment B-3 states the HPWH incentive maximum amount is \$3,500, \$15,000, or up to a percentage of project cost depending on which program the incentive is labelled under.

- a. Please confirm if the incentive amounts in these attachments are the new incentive maximums that PE is proposing for heat pump water heaters.
- b. Please explain the reason for the difference in the incentive amounts for each of these programs.
- c. What is the current incentive maximum for heat pump water heaters in each of the programs identified in the answer to item b.
- d. How are the actual incentive amounts determined for program participants if the maximum amount is not provided? Is the maximum amount provided more often than not?

Response:

- a. Confirmed. As required by the Commission, extensive Joint Utility coordination took place to develop the "up to" incentive amounts. The amounts shown in Attachment B-1 are consistent with the amounts included in the Company's current approved plan. The amounts proposed in Attachment B-3 were developed with additional Joint Utility coordinated during development of the Company's Revised Plan for 2025-2026.
- b. In summary, the amounts included on the first page of Attachment B-1 are for the installation in existing homes where customers likely have increased costs for the installation whereas the values shown on the second page are as an additive measure as part of an efficient new home construction project that can better accommodate the installation. In addition, the amounts shown in Attachment B-3 are for the beneficial electrification of existing fossil fuel installations which are anticipated to require a greater incentive to overcome barriers to participation. The following provides more details regarding the aforementioned incentive amounts:

Response of The Potomac Edison Company to Discovery Request
MD Energy Efficiency and Peak Demand Reduction Revised Plan Proceeding PY 2025-2026
Maryland Public Service Commission Case No. 9705

- **Attachment B-1** provides the up to incentive amounts for energy efficiency retrofit projects. The Energy Efficient Products and Home Retrofit programs educate and influence customers to convert their existing resistive electric water heaters to more efficient heat pump water heaters (“HPWH”). The maximum up to value of \$2,500 primarily considers a portion of the customers incremental cost for the conversion and further recognizes that customers most likely have incremental installation costs to accommodate the heat pump water heating in their existing homes.
 - The incentives for HPWH’s on Page 2 of Attachment B-1 is an additive measure incentive provided under the ENERGY STAR for New Homes program which educates and influences primarily national builders to install efficient HPWH’s in lieu of federal standard electric resistive water heaters. The maximum up to value of \$1,500 primarily considers national builder and implementation provider input to influence the installation of more efficient equipment as part of the new home construction where the installation can be most easily accommodated.
 - **Attachment B-3** provides the up to incentive amounts for electrification conversion projects. Energy Efficient Products and Home Retrofit programs educate and influence customers to convert their existing fossil fuel (Natural Gas, Propane or Oil) equipment to efficient electric equipment. The \$3,500 up to value listed under the Energy Efficiency Products Appliance Rebates subprogram primarily considers a portion of the customer total project cost to convert their existing fossil fuel water heater and replace it with an electric HPWH. The Home Retrofit Home Energy Retrofit Program subprogram incentive of Not To Exceed \$15,000 is for customers who adopt comprehensive retrofits of the home including electrification of their heating and/or water heating (not exclusive for electrification). The \$15,000 up to value primarily considers a portion of the customers total comprehensive project cost, including of the cost to convert their existing fossil fuel equipment and replacement of it with efficient electric equipment in addition to the costs of other comprehensive retrofits. Based on the expansion of comprehensive retrofit projects to include beneficial electrification of water heating, this up to amount was increased by \$5,000 over the energy efficiency project amount in Attachment B-1 for Whole Home retrofit projects of up to \$10,000.
- c. See response to subpart (b) above. In summary:
- The up to amounts for HPWH’s provided in Attachment B-1 pages 1 and 2 are currently the same up to amounts.
 - The up to amounts in Attachment B-3 are new for electrification and are not currently provided.
- d. The Company has historically provided incentives that are less than the up to amounts. Typically, providing increased incentives such as those close to or at the up to amount are

**Response of The Potomac Edison Company to Discovery Request
MD Energy Efficiency and Peak Demand Reduction Revised Plan Proceeding PY 2025-2026
Maryland Public Service Commission Case No. 9705**

to drive program participation in underperforming programs, overcome market barriers to participation or other reasons. Offered incentives are established based on many factors including but not limited to Joint Utility coordination, input from program implementation providers, Company experience, program performance and market factors.

POTOMAC ELECTRIC POWER COMPANY
MARYLAND CASE NO. 9705
EMPOWER MD
RESPONSE TO MEEA DATA REQUEST NO. 1

QUESTION NO. 1

Refer to the Potomac Electric Power Company 2025-2026 EmPOWER MD Program Filing (“Plan”) at p. 4: “the Company will seek to include additional Environmental Justice (“EJ”) incentives for electrification projects completed in underserved and overburdened communities.”

- a. To what extent, if any, has Pepco considered whether eligible heat pump and heat pump water heaters in EJ communities would also qualify for DHCD’s EmPOWER programs? Please explain.
- b. Please discuss the Company’s efforts to coordinate electrification incentives in EJ communities with DHCD’s programs.
- c. Please describe and/or provide any Pepco EJ electrification program implementation processes and protocols that have been agreed to by DHCD that will ensure that DHCD-eligible customers will be directed to DHCD’s programs.
- d. Has the Company developed coordination protocols such that DHCD participants in EJ communities will be eligible to seamlessly also participate in Pepco’s EJ electrification incentives? Please explain.
- e. Has the Company quantified the impact the proposed EJ initiative would have in improving local air quality in EJ communities? If so, please provide its estimated impacts and any associated workpapers.

RESPONSE:

- a. For heat pump equipment, the Company believes that it is important to prevent customer “double dipping” and does not intend for customers to be able to receive an EJ bonus incentive for a piece of equipment that was also incentivized by DHCD. The EJ incentive is intended only for equipment incentivized by Pepco. The Company is committed to working closely with DHCD to ensure that there are processes to prevent these occurrences. As stated previously, Pepco has experience with this level of coordination for other non-electrification EmPOWER programs. For a more detailed discussion please see MEEA DR 1-1(b).
- b. The Company does not intend to disrupt the current coordination between utility and DHCD programs. The Environmental Justice Screening Tool developed by the Maryland

Department of the Environment considers many factors beyond income.¹ Customers within communities that qualify as overburdened based on the EJ Screening Tool and are eligible for DHCD programs will be referred to DHCD programs in the same manner as the current programs.

It should be noted that although Pepco expects there to be overlap between customers who fall within EJ communities and those who qualify for DHCD programs based on income, this overlap will not be 1:1.

Accordingly, Pepco does not believe that there is an inherent conflict in focusing on these broader environmental factors to facilitate an equitable energy transition.

Further discussions of coordination may also be had in the relevant working groups where broader coordination may be necessary, including with future IRA electrification programs administered by MEA. Finally, Pepco expects to further develop statewide coordination with DHCD in the course of the standing monthly calls between the joint utilities and DHCD, where Pepco expects electrification coordination will be an area of significant discussion.

- c. Pepco expects coordination to function similarly to the current coordination for existing programs. This includes scheduled monthly meetings to highlight opportunities to reach limited income customers. In addition, Pepco plans to continue to actively promote DHCD programs through its marketing materials and at community events.

Specific protocols for electrification programs have not been determined as the details of DHCD's electrification offerings have not yet been shared with Pepco.

- d. Pepco's EJ bonus for electrification were designed only for customers who receive a Pepco electrification incentive and were not intended for customers to be able to "double dip" with DHCD incentives for the same equipment. Therefore, customers eligible for DHCD programs would be directed to DHCD in a similar manner as currently occurs in the territory. The proposed EJ electrification incentives are designed to be an adder on top of larger equipment incentives and are not intended to stack by themselves with DHCD equipment incentives. Please see MEEA DR 1-1(b) for more detail on intended coordination with DHCD on these issues.
- e. This analysis was not performed.

SPONSOR: The Company

¹ MDE uses four factors to calculate the EJ scores, which are: (1) pollution burden exposure; (2) Pollution burden environmental effects; (3) Sensitive populations; and (4) Socioeconomic/demographic indicators. *See also* https://mde.maryland.gov/Environmental_Justice/Pages/EJ-Screening-Tool.aspx.

POTOMAC ELECTRIC POWER COMPANY
MARYLAND CASE NO. 9705
EMPOWER MD
RESPONSE TO MEEA DATA REQUEST NO. 1

QUESTION NO. 3

Refer to the Plan at p. 10: “Minimum efficiency requirements for the listed fuel switching measures will match the current energy efficiency measure offerings. This means that all systems will meet minimum efficiency eligibility levels above federal minimum standards. Pepco does not plan to include additional restrictions specifying auxiliary systems.”

- a. Has the Company estimated the number of run hours of electric resistance backup heat and magnitude of load for customers who install non-cCHP?
 - i. Please describe any analyses done by the Company on the potential for demand to increase if customers adopt non-cold climate HPs with electric resistance backup heat.
- b. Has the Company considered the energy costs for beneficial electrification customers who install non-cold climate HPs with electric resistance backup heat? Specifically, do customers with heat pumps with electric resistance backup heat risk high electricity bills in colder months if the heat pump defaults to electric resistance backup?
 - i. Please describe any analyses conducted by the Company and provide the Company’s findings and conclusions.
- c. How will Pepco address customer communications regarding the potential for customers who install non-cCHP to experience high winter electric bills?
 - i. Regardless of whether it provides incentives for gas furnaces, will Pepco suggest dual fuel systems, i.e. heat pumps with gas furnace backup, to mitigate the risk of high winter electric bills?
 - ii. Will the Company inform customers of the risks of high winter electric bills if they rely on heat pumps with electric resistance backup?
- d. If customers experience high winter electric bills after installing heat pumps, does the Company believe this would strengthen the market of heat pumps generally?

RESPONSE:

- a. Yes. The Company modeled savings for these measures using ResStock upgrade packages across the Pepco territory. These ResStock datasets include thousands of different homes all of which are modeled with slightly different run hours based on the

home's specific characteristics. As such, Pepco is unable to provide a specific modeled number of run hours for backup heat as the result differs across each home. However, a sample of 10 homes was pulled to provide a rough range of that runtime. Run hours ranged from 24 to 941 hours within the sample, with an average of 539 hours and a standard deviation of 338 hours. The large variation seen here is due to the significant variability between homes within the territory.

- i. Pepco expects winter electricity demand to rise for all space heating electrification projects. For non-cold climate HPs with electric resistance backup heat, Pepco has modeled average winter demand increases of 7.4 – 11.9 kW per system. These are based on averages across the Maryland housing stock using NREL's ResStock datasets and thus represent an average of various housing sizes, vintages, insulation levels, etc.
- b. Pepco has not conducted bill impact analysis for these measures. However, the Company acknowledges that winter energy bills may rise for some customers who choose to electrify within this program. There are many specific factors that may impact those outcomes, including system type, efficiency, home insulation, home air sealing, fluctuating prices for electricity, natural gas, and delivered fuels, and many more.

However, given that some customers may experience higher bills, the company has proposed increased incentive levels for electrification relative to the non-fuel switching incentives already offered for similar equipment. This increased incentive is designed to broadly support electrification's many challenges, which include, but are not limited to, future bill impacts. The Residential HVAC program also provides increased incentives for cold climate systems to help mitigate these impacts where possible, without overtly limiting customer choice.

- c. The Company has not developed messaging for these impacts, as bill impacts are customer and project dependent and thus are likely to produce varied results. Given the complexity of factors that contribute to these bill impact analyses and other considerations that may impact the specific equipment chosen by a customer, Pepco believes that contractors are best equipped to discuss these complexities with customers and make decisions about the specific equipment that works with a customer's budget, housing considerations, market availability, etc. Accordingly, the Company plans to work with contractors and provide educational materials and tools where appropriate to ensure that they are equipped to understand the risks of increased winter bills for certain systems.
 - i. Pepco is committed to not limiting customer choice in its electrification efforts, with the goal of catalyzing a rapid market transition to increase adoption of heat pump equipment. The company believes that contractors are the most appropriate party to provide specific equipment suggestions.

- ii. The specific communications strategy for these programs has not yet been developed.
- d. Pepco has not conducted an analysis on the extent to which any individual factor will impact Maryland's heat pump market. Holistically, the Company believes that the best way to help strengthen the market is by incentivizing ENERGY STAR certified efficient heat pump equipment.

SPONSOR: The Company

**Southern Maryland Electric Cooperative, Inc. (“SMECO”)
Response to the Staff of the Public Service Commission of Maryland (“Staff”)
Data Request No. 1
Case No. 9705 – EmPOWER Filings (Mid Year Report and 2025-2026 Refiled Plans**

Item No. 1-4:

Page 8 of the revised plan filing states that SMECO is proposing to increase the incentive up-to amount for space/water heating electrification measures from \$10,000 to \$15,000.

- a. How was the original incentive maximum amount determined and how was the new incentive maximum amount determined?
- b. What was the average incentive amount provided for space/water heating electrification measures for each year from 2021-2023?
- c. How is the actual incentive amount determined if it does not reach the maximum amount?
- d. Does SMECO use assumptions for the average cost and average lifespan of an electric space/water heater compared to an efficient gas, gas, or other fuel space/water heater? If so, please provide the assumptions and the sources that inform them if applicable.

Response:

- a. These incentive amounts are determined using multiple variables including program budgets, forecasted savings targets, industry and stakeholder feedback, evaluation and cost effectiveness calculations, alignment with other EmPOWER utilities, and other factors used to optimize participation and expenditures. Typically, the incentive amount offered is below the filed maximum up to amount. The new incentive maximum amount was determined in coordination with the other EmPOWER utilities as these are set statewide.
- b. Electrification measures have not previously been offered within SMECO’s programs, therefore no incentives were provided for these measures for 2021-2023.
- c. See SMECO response to Staff DR 1-3(a) above.
- d. SMECO uses the Home Energy Retrofit Project useful life assumption of 15 years based on historic project data which has gone through the evaluation process and represents an average of the measures that have made up the program. SMECO has collected cost data from several sources for electrification measures which is provided in Item No. 1-4, Attachment 1.

MARYLAND PUBLIC SERVICE COMMISSION

WASHINGTON GAS LIGHT COMPANY

Case No. 9705

WASHINGTON GAS COMPANY RESPONSE
AND/OR NOTICE OF OBJECTION/UNAVAILABILITY
DIRECTED TO THE MARYLAND ENERGY EFFICIENCY ADVOCATES

MEEA DATA REQUEST NO. 1

QUESTION NO. 1-2

- Q.** Refer to the Company's statement "Regarding natural gas incentives, Washington Gas has found these incentives result in cost-effective GHG reductions" [p. 5 of 65].
- a. Specifically, which "natural gas incentives" is the Company referring to? Please list each measure category to which this statement applies.
 - b. For each measure answer the following:
 - i. Is the baseline efficiency used in the analysis the minimum federal standard efficiency for the measure category?
 - ii. Is the baseline efficiency used in the analysis an evaluated or otherwise determined market baseline for the measure category?
 - iii. Is the baseline efficiency used in the analysis something other than either the minimum federal standard or market baseline efficiency?
 - c. Provide the baseline efficiency and assumed baseline energy use used by the Company in assessing measure cost-effectiveness. Provide the basis of each assumption for each measure in assessing cost-effectiveness for natural gas equipment incentives.
 - d. Provide the measure-level cost-effectiveness analysis conducted by the Company or its consultants. Include all assumptions, by measure, for each measure included in the Company's portfolio of programs. Provide this response in fully functional electronic Excel format, with formulas intact

A. For part a: The use of the statement quoted in this data request generally refers to the Company’s EmPOWER programs that offer incentives for high efficiency gas equipment and appliances. Measure level cost-effectiveness is not a requirement through EmPOWER. As demonstrated in the Company’s 2024-2026 Program Plan, all programs that promote the installation of gas equipment and appliances are cost effective and reduce GHG emissions. The table below provides supporting evidence from the Company’s Program Plan, including the name of each applicable program and a corresponding benefit-cost ratio per the Commission-approved Maryland Jurisdiction Specific Test (MJST).

Program Name:	MSJT Ratio:
Residential Prescriptive (Home Energy Savings)	3.11
Residential New Construction	5.76
Commercial Prescriptive Solutions	1.29
Commercial Custom Solutions	2.06

For part b, section i: Primarily, federal standards were used to establish baseline efficiency for measures, though baseline information can be found in the MD TRM v11.

For part b, section ii: Primarily, federal standards were used to establish baseline efficiency for measures, though baseline information can be found in the MD TRM v11.

For part b, section iii: Primarily, federal standards were used to establish baseline efficiency for measures, though baseline information can be found in the MD TRM v11.

For part c: Please see “Attachment 1 - MEEA DR 1-2 - WGL Measure List 2024-2026” which describes how savings were estimated for each measure.

For part d: EmPOWER Cost-effectiveness requirements call for measurements at the program level so individual measure cost effectiveness was not calculated.

SPONSOR:
 Josh McClelland
 Director, Energy Efficiency

MARYLAND PUBLIC SERVICE COMMISSION

WASHINGTON GAS LIGHT COMPANY

Case No. 9705

WASHINGTON GAS COMPANY RESPONSE
AND/OR NOTICE OF OBJECTION/UNAVAILABILITY
DIRECTED TO THE MARYLAND ENERGY EFFICIENCY ADVOCATES

MEEA DATA REQUEST NO. 1

QUESTION NO. 1-8

- Q.** If a TRM was used for savings estimates used in cost-effectiveness analyses, provide the TRM used for each measure.

WASHINGTON GAS' RESPONSE

09/09/2024

- A.** Please see attached file for the Company's response to Question No. 1-2. "Attachment 1 - MEEA DR 1-2 - WGL Measure List 2024-2026" that shows the basis for savings used by that measure in the plan filing and which TRM was used, as applicable, for that measure.

SPONSOR:
Josh McClelland
Director, Energy Efficiency

MARYLAND PUBLIC SERVICE COMMISSION

WASHINGTON GAS LIGHT COMPANY

Case No. 9705

WASHINGTON GAS COMPANY RESPONSE
AND/OR NOTICE OF OBJECTION/UNAVAILABILITY
DIRECTED TO THE MARYLAND ENERGY EFFICIENCY ADVOCATES

MEEA DATA REQUEST NO. 1

QUESTION NO. 1-10

- Q.** Refer to the Company's statement "There is no evidence that demonstrates incentives for high efficiency gas equipment and appliances impede or obstruct electrification." [p. 7 of 65].
- a. In its analyses of the cost-effectiveness of gas equipment incentives, please provide the estimate useful measure life ("EUL") used for each measure type or category.
 - b. Confirm that the Company's assumption in its cost-effectiveness analyses is that the measures will remain in service for the EUL associated with them. For any answer other than confirm, please explain, in detail.

WASHINGTON GAS' RESPONSE

09/09/2024

- A.** For part a: For measure EUL's, please refer to the attachment included in the Company's response to MEEA DR 1-2.

For part b: Confirmed.

SPONSOR:
Josh McClelland
Director, Energy Efficiency

MARYLAND PUBLIC SERVICE COMMISSION

WASHINGTON GAS LIGHT COMPANY

CASE NO. 9673

WASHINGTON GAS COMPANY RESPONSE
AND/OR NOTICE OF OBJECTION/UNAVAILABILITY
DIRECTED TO THE OFFICE OF PEOPLE'S COUNSEL

OPC Data Request No. 1

QUESTION NO. 1-19

- Q.** Refer to the environmental marketing message and the statement that “Converting an all electric home to natural gas is the equivalent of planting 2.75 acres of trees or driving 26,520 fewer miles each year.”
- a. Provide all documents, analysis, and workpapers supporting this claim that the company relied on when developing the environmental marketing message.
 - b. Did the company confirm whether the statement was true under all circumstances before placing this statement on bills? If so, explain how. If not, explain why not.
 - c. Please state whether this statement was true under all circumstances, for all of Washington Gas’s customers, during the development of the environmental marketing message and for the period of time in which the environmental marketing message was included on customer bills.
 - i. If the answer is yes, provide all documents, analysis and workpapers supporting the company’s conclusion.
 - ii. If the answer is no, does Washington Gas agree that at the time the statement was made, under at least some circumstances, an all electric home is less emissions intensive than a home fueled by natural gas? If so, would the company agree that, under at least some circumstances, converting an all-electric home to natural gas is less environmentally friendly?

WASHINGTON GAS’ RESPONSE

07/31/2024

A.

- a. Washington Gas is not aware that it currently possesses any documents, analysis, or workpapers that the Company specifically relied upon in developing the message.
- b. The Company believes the statement was true under the circumstances reasonably inferred from the message. See response to 1-9.
- c. See response to 1-19(d).

Washington Gas Maryland: 2022 Impact Evaluation Report

Prepared for:



Washington Gas
6801 Industrial Road
Springfield, VA 22151

Submitted by:

Guidehouse Inc.
1676 International Drive Suite 800
McLean, VA 22102
Telephone 646.227.4462
guidehouse.com

September 15, 2023

guidehouse.com

This deliverable was prepared by Guidehouse Inc. for the sole use and benefit of, and pursuant to a client relationship exclusively with Washington Gas ("Client"). The work presented in this deliverable represents Guidehouse's professional judgement based on the information available at the time this report was prepared. Guidehouse is not responsible for a third party's use of, or reliance upon, the deliverable, nor any decisions based on the report. Readers of the report are advised that they assume all liabilities incurred by them, or third parties, as a result of their reliance on the report, or the data, information, findings and opinions contained in the report.

Table of Contents

- Executive Summary A-1**
- 1. Introduction A-3**
 - 1.1 Program Plan and EmPOWER Maryland Goals A-3
 - 1.2 Implementation Overview A-5
- 2. Impact Evaluation Approach A-8**
 - 2.1 Evaluation Activities by Program A-8
 - 2.2 Sample Design A-9
 - 2.3 Greenhouse Gas Emissions Reduction Analysis A-10
- 3. Evaluation Findings A-11**
 - 3.1 Residential Prescriptive Program A-11
 - 3.2 Commercial Prescriptive Program A-13
 - 3.3 Residential and C&I Kits A-14
 - 3.4 Custom Program A-15
 - 3.4.1 Projects 1 and 2 – Condominium Installing Hot Water Heaters and Boilers A-16
 - 3.4.2 Project 3 – Healthcare Facility Optimizing AHUs with a Supply Air Temperature Reset A-17
 - 3.4.3 Project 4 and 5 – Grocery Stores Installing Doors on Refrigerated Cases .. A-18
 - 3.4.4 Project 6 – Religious Building Installing Building Weatherization and Rooftop Unit Optimization..... A-18
 - 3.4.5 Project 7 – Government Building Installing Building Weatherization, Supply Air Temperature Reset, and AHU Optimization A-19
- 4. Net-to-Gross Analysis..... A-20**
 - 4.1 Residential Prescriptive A-20
 - 4.2 C&I Prescriptive..... A-22
 - 4.3 C&I Custom..... A-24
- 5. Customer Satisfaction A-25**
- 6. Conclusions and Recommendations A-28**
- Appendix A. Sampling Approach..... A-30**
 - 2.1 C&I Custom A-31
 - 2.2 C&I Prescriptive A-32
 - 2.3 Residential Prescriptive A-34
- Appendix B. Energy Conservation Kit..... B-1**

Executive Summary

Washington Gas has implemented energy efficiency programs in Maryland since 2015. On September 1, 2020, Washington Gas applied for approval of a portfolio of energy efficiency programs from the Maryland Public Service Commission (Commission) for 2021-2023. The 2021-2023 plan included:

- Downstream rebates for existing homes and buildings, new construction, and custom programs that are implemented by ICF
- Income-qualified programs run by the Maryland Department of Housing and Community Development (DHCD)
- A behavioral program implemented by Oracle
- Energy efficiency kits implemented by AM Conservation
- Continued coordinated program implementation with Maryland electric utilities

This report presents the results, including verified therms savings and greenhouse gas (GHG) savings, of the Guidehouse impact evaluation of the Washington Gas residential and commercial energy efficiency programs in Maryland during program year 2022. In addition, this report provides information on the evaluation methodologies and detailed findings for the residential prescriptive, commercial and industrial (C&I) prescriptive, and C&I custom programs. Guidehouse presents the results of the residential behavioral evaluation in a separate report.¹

Guidehouse subcontracted Cadmus to evaluate the 2022 Washington Gas residential new construction and residential coordinated programs and the results are included in this report. The DHCD income-qualified programs, which include the Multifamily Energy Efficiency and Housing Affordability program,² Maryland Energy Efficiency Tune-Up, and the Limited Income Energy Efficiency Program³, are also evaluated by Cadmus. The impact evaluation details of this program is included in a separate report.

When comparing evaluated gross savings to forecast gross savings for evaluated programs, Washington Gas achieved 83% of the 2022 forecast of 1,860,459 therms. Broken down by sector, Washington Gas captured 96% of its forecast of 1,497,737 therms for evaluated residential programs and 30% of its forecast of 362,722 therms for evaluated C&I programs. The Washington Gas 2022 portfolio reduced CO₂ emissions by 92,194 metric tons. Table ES-1 summarizes the sector- and portfolio-level evaluation findings for 2022.

¹Guidehouse, *Washington Gas Maryland: 2022 Behavioral Program Impact Evaluation Report*, July 17, 2023.

² <https://dhcd.maryland.gov/HousingDevelopment/Pages/EnergyEfficiencyWeatherization.aspx>

³ <https://dhcd.maryland.gov/Residents/Pages/lieep/default.aspx>

Table ES-1. Washington Gas 2022 Program First-Year Savings Summary

Sector	Reported Savings (therms)*	Evaluated Gross Savings (therms)	Gross Realization Rate	Weighted Net-to-Gross (NTG) Ratio	Evaluated Net Savings (therms)
Residential	1,497,737	1,574,558	1.05	0.91	1,433,305
Commercial	362,722	196,051	0.54	0.55	108,056
Total	1,860,459	1,770,609	0.95	0.87	1,541,362

*Reported savings from *Washington Gas EmPOWER Maryland Semi-Annual EE&C Report*, July 1, 2022-December 31, 2022, Case No. 9362.

Source: Guidehouse

1. Introduction

Guidehouse evaluated the Washington Gas energy efficiency activities occurring during the 2022 program year, from January 1, 2022, to December 31, 2022, the second program year of the 2021-2023 cycle. Guidehouse performed several evaluation activities including engineering reviews, onsite and phone verifications, and online surveys to calculate evaluated energy (therms) savings for all residential and commercial energy efficiency programs.

1.1 Program Plan and EmPOWER Maryland Goals

On September 1, 2020, Washington Gas applied for approval of a portfolio of energy efficiency programs for 2021 through 2023 from the Commission. Washington Gas operates these programs under the EmPOWER Maryland legislative framework, and the programs are offered on a voluntary basis. As part of the annual evaluation, measurement, and verification (EM&V) process, Washington Gas contracted Guidehouse as a third-party provider to assess the results of the programs. Washington Gas's 2020 filing describes the residential prescriptive, behavioral, new construction, coordinated, and limited income programs, as well as the C&I prescriptive and custom programs. These programs seek to promote energy efficiency awareness among the Washington Gas residential and commercial customers in Maryland and increase the ownership rate of energy efficient equipment among the utility's customers. Table 1-1 provides an overview of the Washington Gas programs.

Table 1-1. Overview of Programs

Program Name	Implementer	Program Description
Residential Prescriptive (Rebates)	ICF	This program provides downstream customer rebates primarily for space and water heating equipment. To increase contractor awareness and customer participation for additional savings, the program increased rebates for all eligible equipment by 15% through the end of 2023.
Residential Prescriptive (Kits)	AM Conservation	Customers who complete the Online Home Energy Profile are eligible to receive a residential energy conservation kit. ⁴
Residential Behavior Based	Oracle	<p>The behavioral program provides customers with Home Energy Reports (HERs) on their energy use behaviors. HERs offer customized guidance on how to reduce energy usage and inform them of other Washington Gas programs that could help them reduce their energy usage and costs.</p> <p>Washington Gas updated both print and email HERs in September 2022 with a new design, additional energy insights, increased opportunities for customer engagement and enhanced behavioral techniques intended to encourage energy-saving activities.</p>

⁴ <https://wgl.opower.com/ei/x/state-selector>

Program Name	Implementer	Program Description
Residential New Construction	ICF	<p>The Residential New Construction program provides incentives to homebuilders and includes:</p> <ul style="list-style-type: none"> • Incentives paid by Washington Gas to builders for the installation of efficient gas measures, such as furnaces and water heaters • Incentives for building shell measures that result in both electric and gas savings; the electric utility pays the full incentive for both the gas and the electric savings; Washington Gas then purchases the therm savings from the electric utility
Residential Retrofit Coordinated	Electric Utility Implementer	<p>The Retrofit Coordinated programs focus collaboration between Washington Gas and electric utilities to incorporate rebates for gas saving opportunities into EmPOWER Maryland programs; the Retrofit Coordinated programs include:</p> <ul style="list-style-type: none"> • Quick Home Energy Checkup (QHEC) • Home Energy Improvement Program (HEIP) • Home Performance with ENERGY STAR (HPwES) <p>The programs are implemented by the electric utility implementer, and Washington Gas purchases therm savings from the electric utilities.</p>
Income-Qualified	DHCD*	<p>The Income-Qualified program works to alleviate the energy burden for income-qualified customers by reducing the cost of their energy bills. Washington Gas partners with DHCD to provide weatherization and energy conservation measures to eligible customers at no cost.</p>
C&I Prescriptive (Rebates)	ICF	<p>The C&I prescriptive program offers rebates to customers to purchase and install high efficiency gas equipment. Rebate amounts are fixed rates per measure type or capacity based on the MidAtlantic TRM.</p>
C&I Prescriptive (Kits)	AM Conservation	<p>Washington Gas offers two types of commercial kits: a general kit that is available to any C&I customer, and a food service kit available to C&I customers in the food service industry only.</p>
C&I Custom	ICF	<p>The C&I custom program allows customers to apply for incentives for energy efficiency upgrades not covered by the C&I prescriptive program. The custom program encompasses more complex systems as well as energy efficient technologies and gas-saving measures not included in the other programs.</p>

*Evaluated by Cadmus
Source: Guidehouse

This document provides detailed 2022 impact evaluation findings for the Washington Gas residential prescriptive, C&I prescriptive, and C&I custom programs. The detailed impact evaluation results for limited income programs is presented in a separate report.

1.2 Implementation Overview

Table 1-2 lists the active deemed measures implemented through the residential prescriptive program and the C&I prescriptive program.

Table 1-2. Implemented Measures in 2022

Sector	Program	Measure	Program Eligibility Requirement*	Quantity	
C&I	C&I Custom	Custom Measure	N/A	22	
		Convection Oven	ENERGY STAR Certified or Eff ≥ 46%	2	
		Gas Fryer	ENERGY STAR Certified or Eff ≥ 50%	27	
		Boiler	AFUE ≥ 92%	3	
		Large Boiler	TE ≥ 94% TE	7	
	C&I Prescriptive (Rebates)	Small Boiler Tier 2	AFUE > 92%	2	
		Storage Water Heater	TE ≥ 94%	2	
		Large Storage Water Heater	TE ≥ 94%	5	
		Small Tankless Water Heater	AFUE ≥ 94%	3	
		High Pressure Steam Trap	N/A	6	
		Medium Pressure Steam Trap	N/A	12	
		C&I Prescriptive (Kits)	General Kit	N/A	237
			Food Service Kit	N/A	79
	Residential	Residential Prescriptive (Rebates)	Boiler Tier 1	ENERGY STAR Certified and AFUE ≥ 90%	5
			Boiler Tier 2	ENERGY STAR Certified and AFUE ≥ 95%	20
Gas Clothes Dryer			ENERGY STAR Certified	10	
Furnace Tier 1			ENERGY STAR Certified and AFUE ≥ 92%	266	
Furnace Tier 2			ENERGY STAR Certified and AFUE ≥ 95.1%	722	
Gas Furnace Tune-Up			N/A	405	
Storage Water Heater Tier 1			ENERGY STAR Certified and UEF ≥ 0.675	13	
Storage Water Heater Tier 2			ENERGY STAR Certified and UEF ≥ 0.70	31	
Tankless Water Heater Tier 2			ENERGY STAR Certified and UEF ≥ 0.89	128	

Sector	Program	Measure	Program Eligibility Requirement*	Quantity
		Residential Gas Combination Boiler	ENERGY STAR Certified and AFUE \geq 90% and/or UEF \geq 0.87	12
	Residential Prescriptive (Kits)	Energy Conservation Kit	N/A	4,073

*TE means thermal efficiency; Eff means efficiency rating; PSIG means pounds per square in gauge; AFUE means annual fuel efficiency rating; UEF means uniform energy factor.

Source: Guidehouse.

2. Impact Evaluation Approach

The impact evaluation determines the verified energy and demand savings for each program using methods that align with version 10 of the Maryland Technical Reference Manual (TRM), the Strategic Guidance,⁵ and the Interim Supplements Catalog (ISC),⁶ hereafter referred to as Maryland Guidance Documents. If there are inconsistencies among any of these guidance documents, Guidehouse will apply the following order of primacy as described in the Strategic Guidance:

1. ISC
2. EmPOWER Strategic Guidance
3. Mid-Atlantic TRM version 10⁷
4. Maryland TRM version 11⁸
5. Other technical reference manuals, such as Illinois TRM version 10⁹ or the Minnesota TRM version 3¹⁰

2.1 Evaluation Activities by Program

This report includes the impact evaluation results for the residential prescriptive, C&I prescriptive, and C&I custom program. The evaluation activities for those programs are summarized in Table 2-1.

Table 2-1. Summary of Impact Evaluation Activities

Program	Tracking and Engineering Review	Sample Design	Online Verification Surveys	Onsite/ Phone Verification	Baseline Condition Research	Custom Measure Analysis	Net-to-Gross Analysis
Residential Prescriptive (Rebates)	X	X	X		X		X

⁵ EmPOWER Energy Efficiency Programs Strategic Evaluation Guidance Version 6, December 24, 2020, available at <https://sites.google.com/view/empowermarylandevaluation/home>.

⁶ Guidehouse will use the latest version of the ISC provided by the independent evaluator, available at <https://drive.google.com/drive/folders/1EAZve4D8CGIhw3yP0hQ5RqCOBLwFf4TA>.

⁷ Guidehouse relied on version 10 of the TRM for the 2021 evaluation: *Mid-Atlantic Maryland Technical Reference Manual Version 10*, available at: <https://neep.org/mid-atlantic-technical-reference-manual-trm-v10>.

⁸ Guidehouse relied on version 11 of the TRM for the 2021 evaluation: *Maryland Technical Reference Manual Version 11*.

⁹ Guidehouse relied on version 10 of the TRM for the 2021 evaluation: *2022 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 10.0*, <https://www.icc.illinois.gov/programs/illinois-statewide-technical-reference-manual-for-energy-efficiency>

¹⁰ Guidehouse relied on version 3 of the TRM for the 2021 evaluation: *State of Minnesota Technical Reference Manual for Energy Conservation Improvement Programs*, available at: <https://mn.gov/commerce-stat/pdfs/mn-trm-v3.0.pdf>.

Program	Tracking and Engineering Review	Sample Design	Online Verification Surveys	Onsite/ Phone Verification	Baseline Condition Research	Custom Measure Analysis	Net-to-Gross Analysis
Residential Prescriptive (Kits)	X	X	X				X
C&I Prescriptive (Rebates)	X	X	X	X	X		X
C&I Prescriptive (Kits)	X	X	X				X
C&I Custom				X	X	X	X

Source: Guidehouse

Full details on Guidehouse’s evaluation approach, descriptions for each evaluation activity, and the other 2021-2023 programs can be found in the 2021-2023 Evaluation Plan.¹¹

2.2 Sample Design

Guidehouse referred to the EmPOWER guidance that describes rigor and statistical precision expectations for EM&V activities when developing its research and survey sampling approaches. At a high level, the EmPOWER guidance states the following gross impact precision guidance for developing sample size targets:

- **Portfolio level:** 90% confidence, 10% precision, one-tailed
- **Large programs:** Programs that contribute more than 5% of portfolio-reported savings are high impact programs: 90% confidence, 20% precision, one-tailed; all of the Washington Gas 2022 programs account for 5% or more of portfolio-reported savings.
- **Small programs:** Programs that contribute less than 5% of portfolio-reported savings are low impact programs: 80% confidence, 20% precision, one-tailed; none of the Washington Gas 2022 programs have less than 5% of portfolio-reported savings.

The evaluation team referenced the various data sources described in Section 2 when developing the samples for the different impact evaluation tasks. The following sections describe the sample design and sample targets. Table 2-2 shows the resulting sample sizes for each program. Further sampling details on the stratification for each program, minimum sample sizes and project-specific evaluation activities are included in Appendix A.

¹¹ Guidehouse, *2021-2023 Evaluation Plan Energy Efficiency and Conservation Portfolio*, January 28, 2020.

Table 2-2. Targeted Sample Design Based on the Washington Gas Reported Population

Program	Population*	Reported Savings	Minimum Target Sample Size	Achieved Sample**
Residential Prescriptive (Rebates)	1,612	99,762	7	113
Residential Prescriptive (Kits)	4,073	57,009	5	399
C&I Prescriptive (Rebates)	37	176,572	8	13
C&I Prescriptive (Kits)	344	13,295	15	25
C&I Custom	22	168,681	7	7
Total	5,888	515,319	42	557

*The population for each program reflects the number of participating businesses or households as identified by counting the number of unique participating customer account numbers in the tracking data.

**The achieved sample count reflects the number of valid completed surveys and excludes the number of partial responses and screened out participants.

Source: Guidehouse

2.3 Greenhouse Gas Emissions Reduction Analysis

Guidehouse calculated avoided greenhouse gas (GHG) emissions in metric ton carbon dioxide (CO₂) equivalent using the carbon accounting methodology developed by the Maryland independent evaluator. This methodology applies emission factors per therm for CO₂ to the lifetime verified net therm savings. Table 2-3 summarizes the emissions factors.

Table 2-3. Natural Gas Emissions Factors

Greenhouse Gas	Emissions Factor
CO ₂ Equivalent (Metric Tons per Therm)	0.0063

Source: Loper Energy

The GHG savings for the programs are summarized in Table 6-2.

3. Evaluation Findings

This section presents detailed findings from the 2022 impact evaluation, including tracking and engineering reviews; sample design; online, onsite, and phone verifications, and baseline condition research. The outputs of these analyses are combined to develop program-level realization rates. In summary, Guidehouse calculated a realization rate of 99% for the residential prescriptive program, 44% for the C&I prescriptive program, and 65% for the C&I custom program. The evaluation findings are outlined by program in the subsequent sections.

3.1 Residential Prescriptive Program

The evaluation team performed an engineering review of the input parameters and savings algorithms for each measure in the residential prescriptive program. Guidehouse first conducted a tracking and engineering review to determine the deemed unit energy savings for each measure. The results of this analysis are included in Table 3-1.

Table 3-1. Residential Prescriptive Measure-Level Savings

Program	Measure	Measure Count (units)	Average Per-Unit Savings (therms)	
			Reported	Evaluated (pre-ISR)
Residential Prescriptive (Rebates)	Boiler Tier 1: AFUE ≥ 90%	5	60.4	60.5
	Boiler Tier 2: AFUE ≥ 95%	20	125.4	125.4
	Gas Clothes Dryer	10	4.9	4.9
	Furnace Tier 1: AFUE ≥ 92%	266	65.3	68.7*
	Furnace Tier 2: AFUE ≥ 95.1%	722	88.1	88.4*
	Gas Furnace Tune-Up	405	15.7	4.6
	Storage Water Heater Tier 1: EF ≥ 67.5%	13	17.9	30.0*
	Storage Water Heater Tier 2: EF ≥ 70%	31	28.4	38.7*
	Tankless Water Heater Tier 2: UEF ≥ 89%	128	54.2	65.4*
	Residential Gas Combination Boiler	12	130.7	132.4

*The per unit-evaluated savings incorporate an analysis of the baseline conditions

Source: Guidehouse

The key drivers affecting the realization rate for the residential prescriptive program are furnace tune-ups and updated baseline assumptions for furnaces and water heaters. Total reported

savings for furnace tune-ups were 6,342 therms while Guidehouse evaluated 1,856 therms, a reduction of 71%. Evaluated savings differ from reported savings for furnace tune-ups because Washington Gas applied a maintenance savings factor of 5% while Guidehouse applied a maintenance savings factor of 1.4% per the Maryland TRM v11, which was determined through Evaluation Advisory Group (EAG) meetings as the relevant value to use for this evaluation.

Regarding baseline conditions, Washington Gas assumed in its 2021 – 2023 program plan that large HVAC measures implemented through the residential prescriptive program are replaced at the end of life. However, through customer surveys, Guidehouse determined that 46% of furnace customers and 62% of water heater customers in the residential prescriptive program replace these measures before their end of life. The first-year savings associated with early replacement are typically greater than the savings associated with end-of-life replacement due to different baselines. Incorporating early replacement into the analysis increased the evaluated first-year annualized gross savings by 3.7% relative to the reported savings.

Guidehouse conducted baseline condition research for large HVAC measures in the residential prescriptive program using findings from the online verification surveys. During verification, Guidehouse asked customers to self-report the baseline condition of their existing equipment, through the following questions:

- Did the measure that you installed through the program replace existing equipment?
- What was the status of the equipment that was replaced?
- How long would you have waited to install the equipment?

Guidehouse used the findings to calculate the share of projects that was replaced at the end of life versus early replacements. The results are summarized in Table 3-2.

Table 3-2. Baseline Condition Shares for Residential Furnaces and Water Heaters

Measure	End-of-Life Replacement Share	Early Replacement Share	Number of Survey Responses
Residential Furnaces	46%	54%	232
Residential Water Heaters	62%	38%	53

Source: Guidehouse

Guidehouse extrapolated these baseline findings over the population of residential prescriptive furnace and water heater projects to estimate the total number of early replacement projects. These are summarized in Table 3-3, together with the baseline efficiency and the remaining useful life results found through the survey.

Table 3-3. Baseline Efficiency and Remaining Useful Life Assumptions

Measure	Estimated Number of Projects	Baseline Efficiency*	Remaining Useful Life
---------	------------------------------	----------------------	-----------------------

Residential Furnaces (Replace on Burnout)	536	AFUE = 80%	0 years
Residential Furnaces (Early Replacement)	452	AFUE = 78%	6 years
Residential Water Heaters (Replace on Burnout)	66	UEF = 58%	0 years
Residential Water Heaters (Early Replacement)	106	UEF = 52%	4.33 years

* All efficiency values are sourced from the NEEP TRM v10, except for early replacement existing efficiency for residential water heaters, which is not available in the NEEP TRM v10 and therefore sourced from the IL TRM v10

** The remaining useful life value for furnaces is sourced from the Mid-Atlantic TRM v10. For water heaters Guidehouse estimated the remaining useful life as being one-third of the measure life.

Source: Guidehouse

After the engineering review and the baseline conditions review, Guidehouse adjusted the savings using the ISR results based on the online survey responses. All customers indicated that their rebated equipment was installed and operating.

3.2 Commercial Prescriptive Program

Similar to the residential prescriptive program, the evaluation team also performed an engineering review for the commercial prescriptive program. The results of this analysis are included in Table 3-4.

Table 3-4. Commercial Prescriptive Measure-Level Savings

Measure	Measure Count (units)	Average Per-Unit Savings (therms)	
		Reported	Evaluated (pre-ISR)
Convection Oven	2	134.0	133.8
Gas Fryer	27	492.8	492.8
Commercial Boilers	10	4,358.3	4,358.2
Small Boiler Tier 2 AFUE > 92%	2	792.0	791.8
Storage Water Heater	2	607.5	213.1
Large Storage Water Heater	5	206.8	126.2
Small Tankless Water Heater	3	48.7	21.3
High Pressure Steam Trap	6	10,927.5	1,730.3
Medium Pressure Steam Trap	12	4,156.2	661.5

The key drivers affecting the realization rate for the commercial prescriptive program are steam traps and water heaters. Total reported savings for steam traps were 115,439 therms while Guidehouse evaluated 18,319 therms, a reduction of 84%. Evaluated savings differ from reported savings, because the Mid-Atlantic TRM v10 Steam Boiler Traps Repair/Replace

measure characterization assumes that only failed steam traps are replaced. Onsite verification visits conducted found that all customers who received incentives for steam trap replacements in the current program year replaced their equipment on a fixed schedule, which indicated that a number of rebated traps were still functional at the time of replacement. Guidehouse did not check which steam traps were operating and which had failed, therefore the evaluation team applied a deemed leakage factor of 0.16 from the Illinois TRM v11.

Total reported savings for commercial water heaters were 2,395 therms while Guidehouse evaluated 1,121 therms, a reduction of 53%. Evaluated savings differ for this measure because the reported savings were calculated using the Illinois TRM v6 rather than the High Efficiency Commercial Storage and Tankless Water Heater measure in the Interim Measure Protocol. Additionally, WGL claimed standby losses for tankless water heaters, which apply to storage water heaters only.

After the engineering review, Guidehouse collected additional information to determine the ISR through an online survey, phone interviews and onsite verifications. Guidehouse received seven online survey responses, conducted four phone interviews and conducted two onsite visits, combined these projects represent over 80% of reported program savings. During the onsite visits, installed equipment counts, locations, manufacturers, and model numbers were verified, documented, and photographed. Actual photos of the equipment, nameplates, and, when applicable, operation schedules were all digitally captured. The onsite visits and phone interviews concluded that all rebated equipment was installed and operating, resulting in an ISR of 100%.

3.3 Residential and C&I Kits

Washington Gas distributed a total of 4,073 Residential Kits, 263 C&I General Kits, and 81 C&I Food Service Kits. Guidehouse reviewed the program data and found that 31 residential customers had received more than one kit. Guidehouse also found that 34 duplicate C&I General Kits and 9 duplicate C&I Food Service Kits were deployed to 40 customers, some of whom received more than one duplicate kit. Because the deemed savings for the kit measures assume a single kit per service address, the savings associated with any additional kits beyond one per service address were set to zero.

Guidehouse evaluated savings for all kit measures using information on the specific products provided in each kit by Washington Gas and algorithms sourced from the Mid-Atlantic TRM v10, the Maryland TRM v11 and measure-specific characteristics provided by the implementer. The contents for each type and the deemed savings are outlined in Table 3-5.

Table 3-5. Kit Contents and Total Deemed Kit Savings by Measure

Measure	Residential Kit		C&I General Kit		C&I Food Service Kit	
	Quantity	Total Savings (Therms)	Quantity	Total Savings (Therms)	Quantity	Total Savings (Therms)
Pipe insulation (3' pieces)	2	2.5	2	0.4	2	0.4
Pre-rinse spray valve	0	-	0	-	1	58.7

Measure	Residential Kit		C&I General Kit		C&I Food Service Kit	
1.0 GPM faucet aerator	2	5.4	2	5.4	2	5.4
1.5 GPM showerhead	1	9.5	0	-	0	-
Outlet gaskets	4	0.8	4	0.8	4	0.8
Switch gaskets	4	0.8	4	0.8	4	0.8
12 oz can insulating spray foam	1	8.7	2	17.4	2	17.4
5 oz tube hand dispensed caulk	1	7.6	2	15.2	2	15.2
3/16" x 3/8" x 17' Roll closed cell foam weather strip	1	0.3	2	0.7	2	0.7
Single-seal door sweep	1	5.0	2	9.9	2	9.9
Total		40.6		50.6		109.3

*GPM means gallons per minute

Source: Guidehouse

After that, Guidehouse surveyed all customers to determine which kit measures were installed and are currently operating based on 406 responses for the Residential Kits, and 25 responses for the C&I Kits, as outlined in Table 2-2. The ISR results, and the evaluation results for kits are summarized in Table 3-6. ISRs broken out by kit measure are included in Appendix B.

Table 3-6. Kit In-Service Rates and Evaluated Savings

Program	Population	Reported Savings (therms)	Evaluated Savings pre-ISR	ISR	Evaluated Savings (post-ISR)
Residential Kit	4,073	98,199	164,227	31%	50,449
C&I General Kit	263	6,217	11,587	34%	3,955
C&I Food Service Kit	81	11,252	7,873	45%	3,563

Source: Guidehouse

3.4 Custom Program

Guidehouse conducted detailed file review and a combination of phone and onsite customer interviews to verify key project-specific parameters for the custom program. The sampled

projects represent 52% of the reported savings. The realization rate for the sampled custom projects is 65%, as summarized in Table 3-7.

Table 3-7. C&I Custom Program Summary

Project	Business	Measure	Reported Savings (Therms)	Evaluated Savings (Therms)	Realization Rate
1	Multifamily	Boilers	40,780	10,670	26%
2	Multifamily	Hot Water Heaters	7,146	6,061	85%
3	Health	Supply Air Temperature Reset	18,895	19,048	101%
4	Grocery	Open Case Fridge Door	8,666	9,937	115%
5	Grocery	Open Case Fridge Door	3,962	3,660	92%
6	Religious	Building Tune-Up	4,629	4,629	100%
7	Government	Building Tune-Up	2,892	2,892	100%
Total			86,970	56,897	65%

Source: Guidehouse

The following sections briefly describe the installed energy conservation measures, ex ante calculation, and verification approach for the seven sampled C&I custom projects.

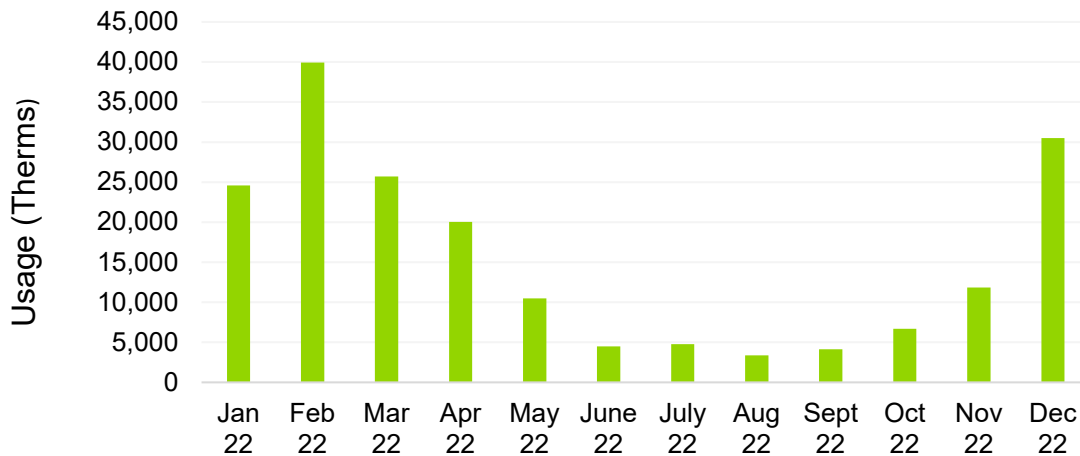
3.4.1 Projects 1 and 2 – Condominium Installing Hot Water Heaters and Boilers

Guidehouse conducted an onsite evaluation of a condominium to verify project details relating to the replacement of the property’s existing two steam boilers and two large water heaters with four smaller, more efficient units for each equipment type. The reported energy savings of the boiler replacement are 40,780 therms, and the reported energy savings of the water heater replacement are 7,146 therms.

The verified energy savings for the boiler replacement were determined to be 10,670 therms. The customer confirmed that the boilers provided space heating to various parts of the building, including tenant units, lobbies, and common areas. The main driver of the decreased energy savings for this project was the recalculation of the heating load. The service provider’s initial heating load calculation assumed usage patterns for the water heaters and boilers which were later found to be inconsistent with the actual schedule of the equipment during the onsite evaluation. The onsite verification visit revealed that only one boiler and one water heater are in operation at any given time, with an automation system cycling between the four pieces of equipment. During times of peak use, each piece of equipment meets demand while operating at approximately 70% of its capacity.

To validate the space heating load, billing data was obtained from Washington Gas to verify actual trends in gas usage, as seen in Figure 3-1. The billing data was used in the revised calculation to ensure the accuracy of the input. The verified heating load was calculated from the billing data of the period directly before the project’s implementation in September 2022 by subtracting the average monthly base load gas usage from the peak monthly gas usage value. This therms value was converted to MBH to find the peak consumption MBH of the system, which was used in the calculation.

Figure 3-1. 2022 Gas Usage Data for Condominium



The verified energy savings for the water heater replacement were determined to be 6,061 therms for the water heaters. Guidehouse found a discrepancy between the reported efficiency in the calculator file provided by the service provider and the efficiency noted on the equipment nameplate and updated the calculation to use the verified nameplate efficiency. The service provider had additionally used a custom value of 50°F as the inlet water temperature rather than the TRM deemed value of 60.9°F, but the actual inlet water temperature was found to be 66°F on site. Finally, onsite verification revealed that the outlet water temperature of the units is 140°F rather than 125°F as specified by the project files. Water is cooled to 125°F in a mixing unit before being distributed to tenants, but the outlet water temperature for this evaluation was adjusted to 140°F to reflect the output temperature of the water heating units themselves.

3.4.2 Project 3 – Healthcare Facility Optimizing AHUs with a Supply Air Temperature Reset

A health facility implemented a building intelligence solution aimed at real-time collection and transmission of energy usage data to optimize energy consumption. The specific measure evaluated for potential rebates was the Supply Air Temperature (SAT) Reset, a method that adjusts the supply temperature of the outside cold air to meet heating demands during nighttime operations, striking a balance between occupant comfort and energy costs.

The project focused on optimizing energy usage for 11 air handling units (AHUs) situated on each floor of the healthcare facility. Prior to the implementation of the project, the AHUs operated continuously at a temperature of 50°F, which increased to 54-55°F during the night. After the installation of the 5°F SAT Reset, the AHUs operate within a range of 55-65°F. The savings achieved were determined using the ASHRAE Fundamentals Sensible Heat Gain Calculation, and bin hours were collected based on reported trend data. The cumulative reported savings from this project totaled to 18,895 therms.

To validate the project’s results and key inputs, Guidehouse conducted a comprehensive desk review of the project files and arranged a customer phone interview. During the verification process, some challenges arose in clarifying the project scope since there was limited documentation. However, the valuable cooperation and insights provided by the customer’s

implementor significantly contributed to clarifying these questions. Guidehouse further engaged in discussions with the implementor, obtaining further trend data that corroborated the system's current operation and CFM (Cubic Feet per Minute) values. The implementor provided estimated data points for the minimum damper position and heating efficiency due to limited documentation. After review, these inputs were considered conservative and retained in the analysis. The verified ex post savings is 19,048 therms, with the slight variance attributed to a slight change in CFM, as indicated by the additional trend data provided during the verification phase.

3.4.3 Project 4 and 5 – Grocery Stores Installing Doors on Refrigerated Cases

Two grocery stores from the same parent company installed doors on existing refrigerated open multi-deck cases to prevent cold air from escaping into the open space, reducing the HVAC load during winter months. The doors were designed to fit onto the open multi-deck cases with minimal modification, and the measure incentives were based on per-foot of case enclosed. The evaluation process focused on verifying the prescribed method, specifications, and deemed values since logger data was not available. The reported savings from this project amounted to 12,628 therms.

Although the workbooks provided for the project followed a prescriptive methodology, the project lacked sufficient documentation for sources used. However, through an interview with the service provider, Guidehouse discovered that the approved methodology was derived from the 2022 Wisconsin TRM. The TRM's refrigerated door casing equation utilized constant deemed values, except for the Btuh case load, which was verified by the customer and via specification sheet. The confirmed verified ex post savings is 13,597 therms, with the difference attributed to an updated heating degree day value that uses the store's ZIP code for increased accuracy.

3.4.4 Project 6 – Religious Building Installing Building Weatherization and Rooftop Unit Optimization

A religious facility conducted a full building tune-up, including weatherization and optimizing the AHU schedule. The evaluation used binned hours and ASHRAE as the primary sources for analysis, resulting in reported savings of 4,629 therms.

Guidehouse agreed with the methodology and approach used for this evaluation. For AHU schedule optimization, a heating and cooling load profile was developed using TMY3 from BinMaker Pro software. Proposed bin hours assumed HVAC units would follow the proposed schedule. Weatherization targeted door weatherstripping, door sweep, and astragals, with ASHRAE Climatic Design for air sealing impact calculation. The evaluation analysis confirmed verified ex post savings of 4,629 therms.

This project also received an electric rebate and was sampled in PEPCO's program year evaluation. As the EmPOWER electric team had previously reviewed this project and concluded their evaluation, this assessment defaulted to their assumptions, including the acceptance of proposed bin hours and efficiency values for RTUs. Overall, the methodology used was deemed sound and accepted by Guidehouse.

3.4.5 Project 7 – Government Building Installing Building Weatherization, Supply Air Temperature Reset, and AHU Optimization

A government facility conducted a full building tune-up, encompassing various energy-saving measures, including weatherization and optimization of the AHU and its schedule. The project's evaluation utilized binned hours and ASHRAE as the primary source for analysis, resulting in a reported savings of 2,892 therms.

The AHU schedule optimization involved creating a table of the proposed schedule and then comparing it with binned hours data. An interview with the customer revealed a discrepancy between the schedule the customer reported and the documented schedule, with a significant difference in annual operating hours (5316 hr/year to 3640 hr/year– a 32% reduction). However, the trend data was only given in binned data, and the customer expressed uncertainty in the reduced schedule. Due to limited reliable data, Guidehouse opted for the conservative approach and retained the documented operating hours in the analysis.

Guidehouse agreed with the methodology and approach for the remaining measures. For the optimization of outside fresh airflow, binned hours data using TMY3 was utilized to determine the extent of flow reduction, which amounted to a 20% decrease. The weatherization aspect of the project addressed various areas, including door weatherstripping, door sweep, and astragals. To calculate the air sealing impact, ASHRAE Climatic Design was referenced. Overall, Guidehouse agreed with the analysis, resulting in a verified ex post of 2,892 therms.

4. Net-to-Gross Analysis

Guidehouse conducted primary NTG research for all applicable programs through online surveys, phone interviews and onsite interviews, using the most current EmPOWER Maryland statewide NTG protocols developed with the Maryland independent evaluator. These activities were used to gain insight from customers regarding their decision-making process and the influence of Washington Gas’s programs on their decision to purchase efficient equipment. The evaluation team used this information to conduct NTG analyses for each program. Table 4-1 summarizes the NTG ratio results on the program level.

Table 4-1. Program Level NTG Values

Sector	Program	NTG Value
Residential	Prescriptive (rebates)	0.41
	Prescriptive (kits)	0.72
	Behavior Based	1.00
	New Construction	0.97
	Retrofit Coordinated	0.76
C&I	Prescriptive (rebates)	0.54
	Prescriptive (Kits)	0.73
	Custom	0.55

Source: Guidehouse

The following sections describe the NTG findings in detail by program.

4.1 Residential Prescriptive

The evaluation team sent online surveys to unique residential prescriptive rebate customers with a valid email address. If customers installed multiple measures, the NTG survey questions asked them to focus on their measure with the highest gross savings. Altogether, 124 customers completed the NTG questions in the survey (36 smart thermostat response, 99 furnace responses, 19 water heater responses, and six boiler responses).

Key findings from the surveys indicate the following:

- Residential rebate customers report a moderate level of influence of the program on their decision to purchase high efficiency equipment (an average of 3.6 on a 1-5 scale, where 1 is “not at all influential” and 5 is “very influential”); the highest rated program related factor was the program rebate. Most customers indicated they learned about the program from their contractor or the Washington Gas website.
- Around half (55%) of respondents stated they would have installed the same level of efficiency of equipment, at the same time, in the absence of the program. This finding reflects that while participants felt there was some influence from the program rebate, they are also motivated by non-program factors to install high efficiency measures. Some customers reported that the program influenced them to replace their equipment somewhat sooner than they would have in the absence of the program; the NTG methodology factors the reported project acceleration due to the program into the NTG

estimates for participants; reported project acceleration due to the program results in a higher NTG estimate compared to a project with no reported acceleration due to the program, holding all else equal.

Table 4-2 summarizes the NTG results for the residential prescriptive rebates program (excluding the energy efficiency kits). The measure-specific NTG ratios are weighted by the percentage of total program evaluated gross savings to arrive at the 0.41 NTG ratio for the residential prescriptive rebates program.

Table 4-2. Residential Prescriptive Rebates NTG Summary

Measure	Percentage of Total Program Evaluated Gross Savings	Number of Survey Responses	Free Ridership	Spillover	Weighted NTG Ratio
Furnaces	83.5%	99	0.59	0.00	0.41
Water Heaters	10.1%	19	0.56	0.00	0.44
Boilers	3.0%	6	0.65	0.00	0.35
Furnace & Boiler Tune-ups	2.0%	0	NA	NA	0.41*
Combination Boiler	1.7%	0	NA	NA	0.41*
Clothes Dryers	0.1%	0	NA	NA	0.41*
Program Total	100%**	124	0.59	0.00	0.41

* In the absence of any PY2022 survey responses, the program average PY2022 NTG was applied.

** Column values do not appear to sum exactly to 100% due to rounding.

Source: Guidehouse

Guidehouse also surveyed residential energy conservation kit recipients. The NTG ratio was estimated from information collected from 327 respondents. Table 4-3 summarizes the NTG results for the kits portion of the residential prescriptive program. The kit participants were the only surveyed participants in any program who reported any quantifiable spillover, which equated to 7% of program savings. The measure-specific NTG ratios are weighted by the percentage of total program evaluated gross savings to arrive at the 0.72 NTG ratio for the residential prescriptive energy conservation kits.

Table 4-3. Residential Prescriptive Kits NTG Summary

Measure	Percentage of Total Program Evaluated Gross Savings	Free Ridership	Spillover	Weighted NTG Ratio
Showerhead	23.0%	0.34	0.07	0.73
Spray foam	22.4%	0.41	0.07	0.66
Squeeze tube caulk	21.8%	0.43	0.07	0.64
Door sweep	13.4%	0.37	0.07	0.70

Faucet aerators	9.0%	0.10	0.07	0.97
Pipe insulation	7.0%	0.27	0.07	0.80
Switch and outlet gaskets	2.6%	0.24	0.07	0.83
Adhesive weather stripping	0.8%	0.43	0.07	0.64
Program Total	100%**	0.35	0.07	0.72

** Column values do not appear to sum exactly to 100% due to rounding.

Source: Guidehouse

Table 4-4 summarizes the overall NTG results for the residential prescriptive program. The subprogram NTG ratios are weighted by the percentage of total program evaluated gross savings to arrive at the 0.51 NTG ratio for the residential prescriptive program.

Table 4-4. Residential Prescriptive Kits NTG Summary

Program	Subprogram	Percentage of Total Program Evaluated Gross Savings	Free Ridership	Spillover	Weighted NTG Ratio
Residential Prescriptive	Rebates	65.3%	0.59	0.00	0.41
	Kits	34.7%	0.35	0.07	0.72
Program Total		100%	0.51	0.02	0.51

Source: Guidehouse

4.2 C&I Prescriptive

All C&I prescriptive program participants received an online survey or were selected for a phone or onsite interview to understand the influence of Washington Gas’s programs on their decision to purchase efficient equipment. To increase the sample size used to analyze NTG, Guidehouse used data collected during the 2021 and 2022 evaluations.

The survey results indicated that the C&I prescriptive program did, in some cases, motivate customers to replace equipment sooner than they would have in the absence of the program. Most of these customers indicated a modest acceleration of 2-4 years. Table 4-5 summarizes the NTG results for the C&I prescriptive program.

Table 4-5. C&I Prescriptive Rebates NTG Summary

Measure	Percentage of Total Program Evaluated Gross Savings	Number of Survey Responses	Free Ridership	Spillover	Weighted NTG Ratio
Boilers	57.8%	5	0.36	0.00	0.64
Steam Traps	23.4%	2	0.81	0.00	0.19
Fryers	17.0%	6	0.34	0.00	0.66
Water Heaters	1.4%	1	0.50	0.00	0.50
Ovens	0.3%	0	NA	NA	0.54*
Program Total	100%**	14	0.46	0.00	0.54

* In the absence of any PY2022 survey responses, the program average PY2022 NTG was applied.

** Column values do not appear to sum exactly to 100% due to rounding.

Source: Guidehouse

The NTG analysis for C&I kits was based on online surveys. Guidehouse sent online surveys to all C&I kit participants for which the program had a valid email address. The NTG ratio was estimated from information collected from 22 respondents. The evaluation team combined the C&I general kits and C&I food service kits into one analysis sample due to a small population sample and that the only difference between a C&I general kit and a C&I food service kit is that the C&I food service kit includes a pre-rinse spray valve, while the C&I general kit does not. Table 4-6 summarizes the NTG results for the C&I kits program. The measure-specific NTG ratios are weighted by the percentage of total program evaluated gross savings to arrive at the 0.73 NTG ratio for the C&I kits program.

Table 4-6. C&I Prescriptive Kits NTG Summary

Measure	Percentage of Total Program Evaluated Gross Savings	Free Ridership	Spillover	Weighted NTG Ratio
Spray foam	34.3%	0.37	0.00	0.63
Pre-Rinse Spray Valve	29.0%	NA*	NA	0.73*
Squeeze tube caulk	26.1%	0.48	0.00	0.52
Faucet aerators	4.3%	0.04	0.00	0.96
Door sweep	4.0%	0.38	0.00	0.62
Switch and outlet gaskets	1.1%	0.00	0.00	1.00
Adhesive weather stripping	0.6%	0.12	0.00	0.88
Pipe insulation	0.6%	0.42	0.00	0.58
Program Total	100%**	0.27	0.00	0.73

* In the absence of any valid PY2022 free ridership survey responses, the program average PY2022 NTG value of 0.73 was applied.

** Column values do not appear to sum exactly to 100% due to rounding.

Source: Guidehouse

Table 4-4 summarizes the overall NTG results for the C&I prescriptive program.

Table 4-7. C&I Prescriptive Kits NTG Summary

Program	Subprogram	Percentage of Total Program Evaluated Gross Savings	Free Ridership	Spillover	Weighted NTG Ratio
C&I Prescriptive	Rebates	9.3%	0.46	0.00	0.54
	Kits	90.7%	0.27	0.00	0.73
Program Total		100%	0.29	0.00	0.71

Source: Guidehouse

4.3 C&I Custom

Guidehouse conducted phone and onsite interviews with five projects that participated in the C&I custom program in 2022. Table 4-7 summarizes the results of the NTG analysis. All sampled projects are retrofits with no replacements.

Table 4-7. C&I Custom NTG Summary

Program	Measure	Percentage of Total Program Evaluated Gross Savings	Number of Survey Responses	Free Ridership	Spillover	Weighted NTG Ratio
C&I Custom	Gas Boiler, Gas Water Heater	55.1%	1	0.50	0.00	0.50
	Supply Air Temperature Reset	21.7%	1	0.45	0.00	0.55
	Doors to Open Refrigerated Display Cases	14.5%	1	0.19	0.00	0.81
	Building Tune-Up	8.6%	2	0.24	0.00	0.76
Program Total		100%	5*	0.45	0.00	0.55

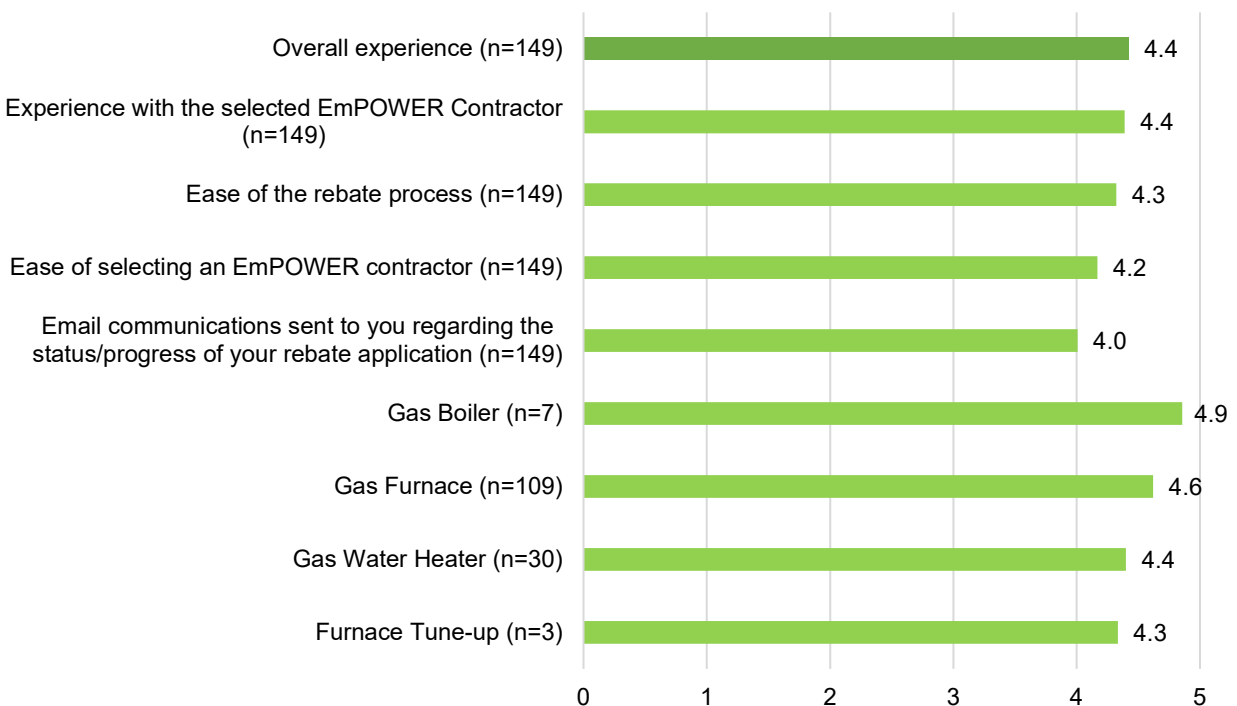
* There are seven projects sampled but five unique customers. Only five surveys were collected because two customers conducted two projects.

Source: Guidehouse

5. Customer Satisfaction

Figure 5-1 summarizes residential prescriptive rebate recipients' satisfaction with the measures that they installed as well as their program experiences. Participants are very satisfied with their overall program experience, with an average rating of 4.4 on a 5-point scale, as well as their contractor experiences and the measures they installed. Participants are somewhat less satisfied with the email communications they received from the program and the ease of selecting a qualified contractor. When asked how their project would have been different without the rebate program, several respondents indicated they would have purchased a cheaper or less efficient model or would have had to delay their project.

Figure 5-1. Residential Prescriptive Rebates Program Satisfaction*

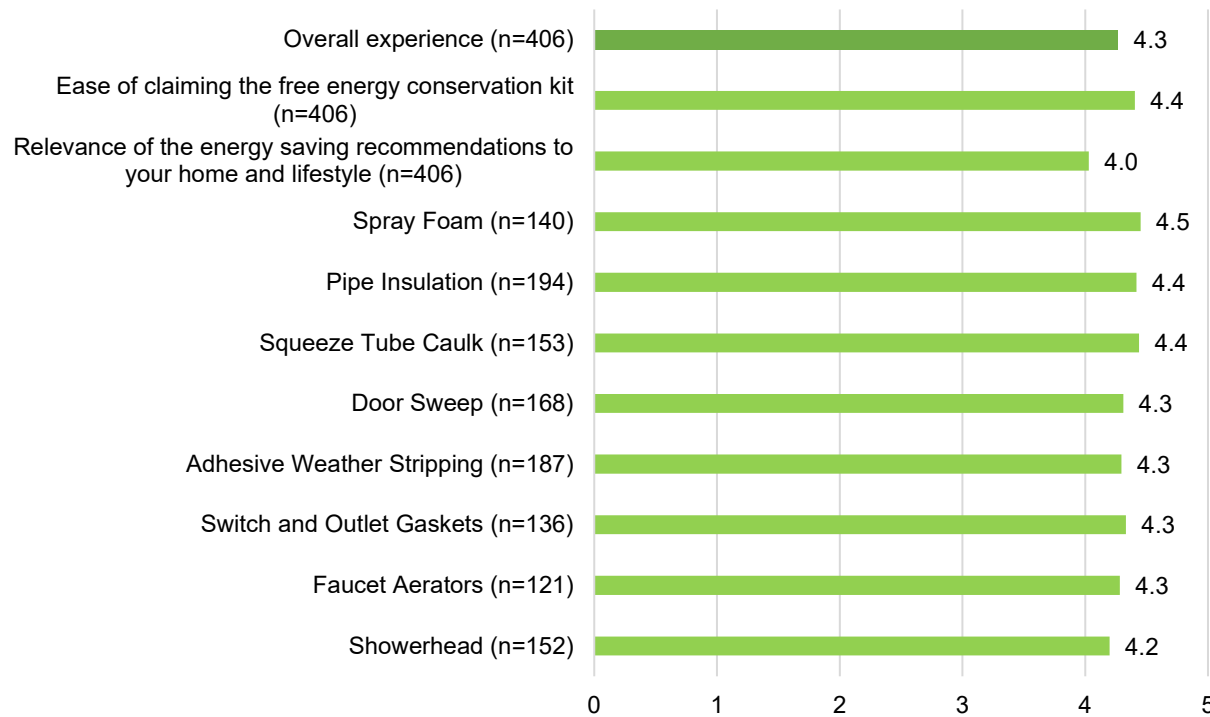


*Satisfaction results reflect valid responses from completed satisfaction batteries, from completed surveys (113) and partially completed surveys (36).

Source: Guidehouse

Figure 5-2 summarizes residential kit recipients' satisfaction with the measures that they installed as well as their program experiences. Participants are overall satisfied with the program (an average rating of 4.3 on a 1-5 scale) and with the ease of participation and the measures installed. Participants are somewhat less satisfied with the relevance of the energy-saving recommendations that they received, with an average rating of 4.0. When asked how the program could be improved, many respondents reported interest in selecting the items in the kit ahead of time so they do not receive any items they do not need. Additionally, several customers also expressed need for instructions on how to install measures included in the kit.

Figure 5-2. Residential Prescriptive Kits Program Satisfaction



*Satisfaction results reflect valid responses from completed satisfaction batteries, from completed surveys (399) and partially completed surveys (7).

Source: Guidehouse

For the C&I Prescriptive program, Guidehouse captured customer satisfaction through the online survey, during the phone interviews and through onsite interviews. Guidehouse made the following observations through these evaluation activities:

- Eleven out of twelve customers rated the overall program a 5/5, the remaining customer provided a 4/5 score.
- Several customers work closely with their contractor, citing positive feedback and experiences.
- All but two customers rank marketing to be low or irrelevant in their decision to apply for the rebate. Instead, they cite their contractor to be influential in their decision, as well the incentive received through the program.
- Three customers cited complaints:
 - One customer expressed the desire for the rebate process to be retroactive, voicing that the application for the rebate has to be received before equipment is installed or bought. The customer compared this to other companies they have worked with in the past who did offer retroactive rebates.
 - One customer expressed frustrations with uploading the documents needed in the rebate process, mentioning that the website sometimes glitches.
 - One customer, who has longer history with the rebate process, expressed a lower rating for email communications regarding the status/progress of the rebate

application. When asked why, the customer said that their incentive approval letter contained errors and does not show how much the check amount will contain. They claimed that this has only ever happened with Washington Gas and can provide examples if needed. Additionally, the customer expressed confusion that there are enhanced rebates for measures during certain periods of time and does not understand why. The customer voiced that they preferred consistency but would also be interested in learning more about why the incentives change over time.

For the C&I custom program, Guidehouse used phone and onsite interviews to ask each customer to share comments or concerns with the program. Overall, customers in the C&I Custom program expressed satisfaction with the rebate program, and they commented that:

- They would like to be more aware of the engineering process.
- They would like to have more support in approaching additional projects to be rebated.
- They would like to have a better understanding of the program steps instead of fully depending on the service provider.

6. Conclusions and Recommendations

Table 6-1 summarizes the impact evaluation results for Washington Gas’s programs in 2022, and Table 6-2 includes the lifetime net savings and CO₂ emissions reductions.

Table 6-1. Washington Gas 2022 Program Annual Savings Summary

Sector	Program	Reported Gross Savings (therms)*	Evaluated Gross Savings (therms)	Realization Rate	Weighted NTG Ratio	Evaluated Net Savings (therms)
Residential	Residential Prescriptive (Rebates)	99,763	98,339	0.99	0.41	40,449
	Residential Prescriptive (Kits)	98,199	50,449	0.51	0.72	36,323
	Residential Behavior	668,265	729,426	1.10	1.00	729,426
	Residential New Construction	413,769	466,123	1.13	0.97	452,139
	Residential Coordinated	217,741	230,221	1.06	0.76	174,968
Residential Total		1,497,737	1,574,558	1.05	0.91	1,433,305
C&I	C&I Prescriptive (Rebates)	176,572	78,179	0.44	0.54	41,873
	C&I Prescriptive (Kits)	17,469	7,518	0.43	0.73	5,488
	C&I Custom	168,681	110,354	0.65	0.55	60,695
C&I Total		362,722	196,051	0.54	0.55	108,056
Total		1,860,459	1,770,609	0.95	0.87	1,541,362

*Reported savings from Washington Gas EmPOWER Maryland Semi-Annual EE&C Report; July 1, 2022–December 31, 2022. Case No. 9494.

Source: Guidehouse

Table 6-2. Washington Gas 2022 Lifetime Net Savings and GHG Reductions

Sector	Annual Evaluated Net Savings	Weighted Lifetime	Lifetime Net Savings	CO ₂ e Emission Reductions (Metric Tons)
Residential Total	1,433,306	9.1	13,048,873	82,208
C&I Total	108,056	14.7	1,585,065	9,986
Total	1,541,362	9.5	14,663,938	92,194

Source: Guidehouse

The main conclusions for the impact evaluation are as follows:

- **Finding 1:** The key drivers affecting the realization rate for the residential prescriptive program are furnace tune-ups, where Washington Gas used a maintenance savings factor of 5% while Guidehouse applied a savings factor of 1.4% per the Maryland TRM v11.
 - **Recommendation:** Update furnace tune-ups savings algorithms to use a maintenance savings factor of 1.4%.
- **Finding 2:** The NTG value for the Residential Prescriptive (rebates) program was 0.44, compared to 0.52 when primary evaluation activities were conducted for that program in 2019. The trend of decreasing NTG values is common for programs as the market penetration for efficient measures increases.
 - **Recommendation:** Consider adding higher efficiency tiers to the program with lower market penetration.
 - **Recommendation:** Consider offering varying rebates to customers based on their existing equipment. For example, a rebate may help mitigate the additional installation costs to install flue gas vents associated with replacing a non-condensing furnace with a condensing furnace. These additional installation costs don't need to be incurred when replacing an existing condensing furnace with a new condensing furnace.
- **Finding 3:** The key drivers affecting the realization rate for the commercial prescriptive program are steam traps and water heaters. The evaluation adjusted savings for steam traps by applying a leakage factor of 0.16 since the steam traps that were replaced through the programs were replaced on a fixed schedule. Regarding water heaters, the reported savings for this measure were calculated using the IL TRM v6 rather than the High Efficiency Commercial Storage and Tankless Water Heater Interim Measure Protocol. In addition, Washington Gas inappropriately claimed standby losses for tankless water heaters.
 - **Recommendation:** Implement a leakage adjustment factor into steam trap savings algorithms by either using a deemed value of 0.16, or by collecting leakage data for each steam trap that is replaced through the program.
 - **Recommendation:** Update water heater savings algorithms to align with the High Efficiency Commercial Storage and Tankless Water Heater IMP, which has been incorporated into the Maryland TRM v11 as well. In addition, Guidehouse recommends that Washington Gas excludes standby water loss savings for tankless water heaters.
- **Finding 4:** For residential prescriptive kits and C&I prescriptive kits the realization rates are 51% and 43%, respectively. The key driver affecting the realization rate is the ISR.
 - **Recommendation:** Guidehouse recommends that Washington Gas reviews and updates the savings and ISR assumptions for their next semi-annual report to align with the values outlined in section 3.3.
- **Finding 5:** The C&I custom program realization rate was 0.65, which was driven by the largest projects having a project level realization rate of 26%.
 - **Recommendation:** Engage evaluators in the review of high impact projects during the implementation stages to reduce realization rate and net to gross impacts during evaluation.

Appendix A. Sampling Approach

The sample design is based on the EmPOWER guidance for the sample size targets:

- Portfolio level: 90% confidence, 10% precision, one-tailed
- Large programs: Programs that contribute more than 5% of portfolio gross savings are high impact programs, 90% confidence, 20% precision, one-tailed. All of Washington Gas’s 2021 programs account for 5% or more of portfolio gross savings.
- Small programs: Programs that contribute less than 5% of portfolio gross savings are low impact programs, 80% confidence, 20% precision, one-tailed. None of Washington Gas’s 2021 programs have less than 5% of portfolio gross savings.

Table 1 shows the minimum sample size required to meet EmPOWER guidance. These are the minimum sample sizes need to achieve statistical significance at the program and portfolio levels. Guidehouse anticipates the achieved sample for the Residential Prescriptive program to exceed the minimum sample due to the large population of customers that are rebated through this program.

Table 1. Targeted Sample Design for the Portfolio Based on the Reported Population

Stratum	Population*	Tracking Database Savings	Verification Methods	Minimum Target Sample Size	Precision (at 90% Confidence, One Tailed)
Custom	22	168,681	Onsite verifications Engineering desk review	7	18.1%
C&I Prescriptive	291	189,867	Online verification survey Engineering desk review	23	5.0%
Residential Prescriptive	5,575	156,771	Online verification survey	12	19.8%
Total	5,888	513,319	-	50	8.1%

*The population for each program reflects the number of participating businesses or households as identified by counting the number of unique participating customer account numbers in the tracking data.

Source: Guidehouse

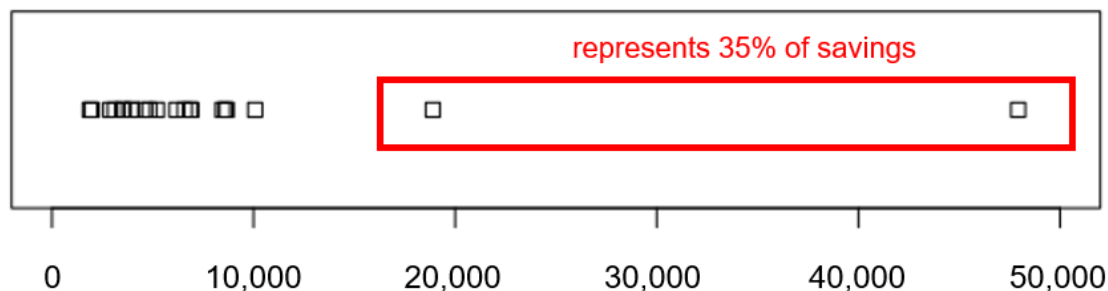
For the C&I Custom, C&I Prescriptive, and Residential Prescriptive programs, populations have been stratified as Table 2, Table 3, and Table 4 show, respectively. Stratification is performed based on two primary factors:

- The implementation method of measures in a program
- The distribution of savings between projects in a program; additional strata are added in programs with a significant spread in savings

2.1 C&I Custom

There are 22 projects in the C&I Custom program. Figure 1 illustrates the range of customer savings, with two projects accounting for 35% of the savings.

Figure 1. Annual Therms Savings for C&I Custom Program per the Premise Level



Source: Guidehouse

Guidehouse stratified the C&I Custom program into two tiers: certainty (2 projects) and medium (19 projects). The remaining projects are under the tiny category, which represent <3% of program savings. To increase sample representativeness, projects in the tiny strata are excluded from the sample size. Projects under the certainty strata represent >10% of program savings and guarantee sampling. These projects include the two outliers pictured in Figure 1. Projects in the medium strata represent the remaining available projects and are randomly sampled.

Guidehouse will conduct engineering desk reviews and onsite verifications for sampled projects. Table 2 shows the minimum sample sizes needed to achieve the program’s precision target of 20% precision at 90% confidence.

Table 2. Minimum Targeted Sample Size for the C&I Custom Program

Stratum	Population	Total Stratum First-Year Savings (Therms)	Verification Methods	Minimum Target Sample Size
Certainty (>10% of program savings)	2	59,675	Onsite verifications Engineering desk review	2
Medium	19	107,127	Onsite verifications Engineering desk review	5
Tiny (<3% of program savings)	1	1,879	None	0
Total	22	168,681	-	6

Source: Guidehouse

Table 3 provides an overview of the proposed projects selected for onsite visits in the C&I Custom program to achieve and exceed the statistical significance targets.

Table 3. Engineering Desk Review and Onsite Selection for the C&I Custom Program

Stratum	Total First-Year Savings (Therms)	Business Type	Site Measure Notes	Received Electric Utility Incentive	Ratio of Program Savings
Certainty (>10% of program savings)	18,895	Health	Other		11.2%
	40,780	Multi-Family	Other		24.2%
Medium	2,892	Government	Control System	X	1.7%
	3,962	Grocery	Other	X	2.3%
	4,629	Religious	Other	X	2.7%
	7,146	Multi-Family	Other	X	4.2%
	8,666	Grocery	Other	X	5.1%
Total	86,970	-	-	-	51.4%

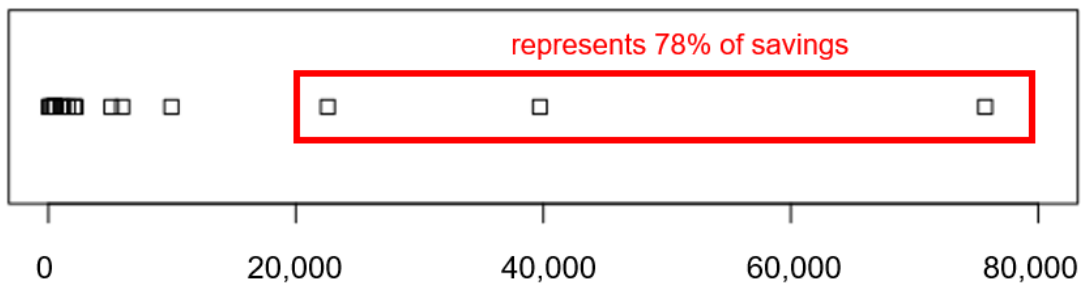
Source: Guidehouse

Guidehouse will coordinate the evaluation with the electric utility evaluator for projects that received an electric utility incentive in addition to a WGL incentive.

2.2 C&I Prescriptive

The C&I Prescriptive program is divided into two sub-programs: C&I Prescriptive Rebates and Energy Conservation Kits. The C&I Prescriptive Rebates strata include Prescriptive and New Business Construction program data and are stratified by the premise level. In total, there are 27 unique customers in the C&I Prescriptive Rebates program. Figure 2 illustrates the variety of customer savings in the C&I Prescriptive Rebates program, with three notable customers representing 78% of the savings.

Figure 2. Therms Savings for C&I Prescriptive Rebates Program per the Premise Level



Source: Guidehouse

Guidehouse stratified the C&I Prescriptive Rebates sub-program into two categories: certainty (3 projects) and small (24 projects). Guidehouse will sample all projects in the certainty strata, representing 78% of program savings. Projects in the small strata represent the remaining available projects and are randomly sampled.

Guidehouse will conduct engineering desk reviews and online verification surveys for the entire population to verify savings. In addition, Guidehouse will conduct onsite or phone verification for the projects in the certainty strata.

Washington Gas implements two types of energy conservation kits to their commercial customers. Guidehouse will conduct an engineering desk review and online verification surveys to evaluate commercial kits. Table 4 summarizes the minimum sample sizes needed to achieve the program’s precision target of 20% precision at 90% confidence for the C&I Prescriptive program.

Table 4. Minimum Targeted Sample Size for the C&I Prescriptive Program

Stratum	Population	Total Stratum First-Year Savings (Therms)	Verification Methods	Minimum Target Sample Size
C&I Prescriptive Rebates – Certainty (>10% of program savings)	3	138,018	Online verification survey Engineering desk review Onsite/Phone verification	3
C&I Prescriptive Rebates – Small	34	38,554	Online verification survey Engineering desk review	5
Energy Conservation Kits	254	13,295**	Online verification survey Engineering desk review	15
Total	291	189,867	-	23

*New Business Construction (NBC) program data is currently grouped into the two C&I Prescriptive Rebates program strata. NBC may be separated out into an additional stratum in the future depending on the number of projects and volume of associated savings reported by ICF.

** Guidehouse estimated value based on the number of implemented kits multiplied by the unit energy savings after applying the in-service rate from the 2021 evaluation.

Source: Guidehouse

Table 5 provides an overview of the proposed projects selected for detailed project file reviews in the C&I Prescriptive program. These projects include all the projects in the certainty strata, and the projects from the Small stratum were randomly sampled.

Table 5. Project File Review Selection for the C&I Prescriptive Program

Stratum	Total First-Year Savings (Therms)	Business Type	Site Measure Notes	Ratio of Program Savings
	22,579	Multi-Family	Large Boiler	12.8%

Stratum	Total First-Year Savings (Therms)	Business Type	Site Measure Notes	Ratio of Program Savings
C&I Prescriptive Rebates – Certainty	39,725	Other	Medium Pressure Steam Trap	22.5%
	75,714	Other	High Pressure Steam Trap, Medium Pressure Steam Trap	42.9%
C&I Prescriptive Rebates – Small	1,584	Multi-Family	Small Boiler	0.9%
	2,145	Convenience	Large Storage Water Heater, Gas Fryer	1.2%
	5,093	Education	Large Boiler	2.9%
	5,965	Education	Boiler	3.4%
	9,944	Health	Large Boiler	5.6%
Total	162,749	-	-	92.2%

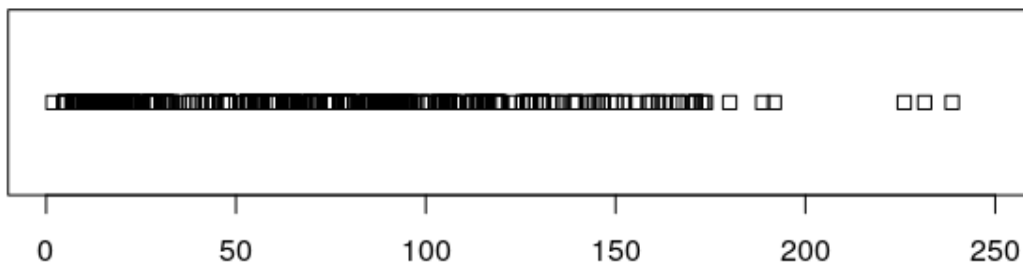
Source: Guidehouse

Given the challenges to hit minimum sample targets for the Commercial Prescriptive program in the past, Guidehouse proposes offering commercial customers a \$50 incentive for completing the online verification survey. If necessary, based on survey response rates, Guidehouse will additionally conduct phone interviews to achieve the minimum sample size for this program.

2.3 Residential Prescriptive

The Residential Prescriptive program is divided into two strata: Prescriptive Rebates and Energy Conservation Kits. Figure 3 illustrates the spread of customer savings for the Residential Prescriptive Rebates (i.e., no kits) with no notable outliers. Therefore, Guidehouse plans to analyze the rebated measures in this program as a single stratum.

Figure 3. Annual Therms Savings for Residential Prescriptive Rebate Program per the Premise Level



Source: Guidehouse

Washington Gas continued to implement energy conservation kits to customers who achieve eligibility by completing their Online Home Energy Profile.¹² Guidehouse will evaluate these kits as a separate stratum. Guidehouse will conduct engineering desk reviews for all projects in the program. In addition, Guidehouse will conduct an online verification survey for all projects. Table 6 shows the minimum sample sizes needed to achieve the program’s precision target of 20% precision at 90% confidence.

Table 6. Minimum Targeted Sample Size for the Residential Prescriptive Program

Stratum	Population	Total Stratum First-Year Savings (Therms)	Verification Methods	Minimum Target Sample Size
Prescriptive Rebates	1,547	99,762	Online verification survey Engineering desk review	7
Energy Conservation Kits	4,028	57,009	Online verification survey Engineering desk review	5
Total	5,575	156,771	-	12

Source: Guidehouse

¹² <https://washingtongas.energysavvy.com/residential/start/>

Appendix B. Energy Conservation Kit

The ISRs found for residential prescriptive kits are summarized in Table 7 and for commercial small business energy conservation kits in Table 8.

Table 7. Evaluated ISRs for Residential Kits

Measure	Evaluated ISR
Faucet Aerators (1.0 GPM)	21%
Low Flow Showerhead (1.5 GPM)	30%
Outlet and Switch Gaskets	20%
Pipe Insulation	36%
Door Sweeps	34%
Weatherstripping	29%
Spray Foam Insulation	32%
Squeeze Tube Caulk	36%
Total	31%

Source: Guidehouse

Table 8. Evaluated ISRs for Commercial Kits

Measure	General Kit Evaluated ISR	Food Service Kit Evaluated ISR
Faucet Aerators (1.0 GPM)	15%	36%
Pipe insulation	38%	50%
Pre-rinse spray valve	-	50%
Outlet and switch gaskets	17%	16%
Weatherstripping	22%	29%
Door sweeps	9%	14%
Spray foam insulation	52%	43%
Squeeze tube caulk	39%	57%
Total	34%	45%

Source: Guidehouse

[guidehouse.com](https://www.guidehouse.com)