TROPOSPHERE LEGAL

April 23, 2025

Ms. Lisa Felice
Michigan Public Service Commission
7109 W. Saginaw Hwy.
Lansing, MI 48909

Via E-File

RE: MPSC Case No. U-21806

Dear Ms. Felice:

Attached please find the enclosed documents for filing:

- Direct Testimony and Exhibits of Alice Napoleon on behalf of Michigan Environmental Council and Sierra Club (Exhibit MEC-1 through MEC-13); and
- Proof of Service.

Thank you for your assistance in this matter. If you have any questions, please feel free to contact me.

Sincerely,

Digitally signed by Christopher M. Bzdok
Date: 2025.04.23 12:50:44 -04'00'

Christopher M. Bzdok
chris@troposphereleagal.com

CC: Parties to Case No. U-21806

STATE OF MICHIGAN

MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the Application of **CONSUMERS ENERGY COMPANY** for authority to increase its rates for the distribution of natural gas and for other relief.	Case No. U-21806

DIRECT TESTIMONY OF

ALICE NAPOLEON

ON BEHALF OF

MICHIGAN ENVIRONMENTAL COUNCIL AND SIERRA CLUB

April 23, 2025

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q Please state your name and occupation.

A My name is Alice Napoleon. I am a Principal Associate at Synapse Energy Economics, Inc. ("Synapse Energy Economics") located at 485 Massachusetts Avenue, Suite 3, Cambridge, MA 02139.

Q Please describe Synapse Energy Economics.

A Synapse Energy Economics is a research and consulting firm specializing in electricity and gas industry regulation, planning, and analysis. Our work covers a range of issues, including economic and technical assessments of demand-side and supply-side energy resources, energy efficiency policies and programs, integrated resource planning, electricity market modeling and assessment, renewable resource technologies and policies, and climate change strategies. Synapse works for a wide range of clients, including state attorneys general, offices of consumer advocates, trade associations, public utility commissions, environmental advocates, the U.S. Environmental Protection Agency, U.S. Department of Energy, U.S. Department of Justice, the Federal Trade Commission, and the National Association of Regulatory Utility Commissioners. Synapse's staff includes over 35 professionals with extensive experience in the electricity and gas industries.

Q Please summarize your work experience and educational background.

A Since joining Synapse in 2005, I have provided economic and policy analysis of electric and gas systems and emissions regulations on behalf of a diverse set of

clients throughout the United States and in Canada. I have co-authored several reports and comments on the role of energy efficiency in New York State in meeting its Reforming the Energy Vision ("REV") objectives, as well as two white papers on natural gas regulatory reforms needed if New York is to meet its decarbonization targets. I have also provided policy analysis and technical support on issues related to the future of natural gas utilities in many other states, including Hawaii, Maryland, Rhode Island, Colorado, Massachusetts, Nevada, and California.

I have provided expert advice on demand-side management programs in numerous states and Canadian provinces regarding a range of issues including incentive-setting methodologies, cost-benefit analysis, avoided costs, load forecasting, and locational demand-side management. I also co-authored a manual for regulators on designing performance incentive mechanisms for utilities, which has been highly utilized by many states.

Before joining Synapse, I worked at Resource Insight, Inc., where I supported investigations of electric, gas, steam, and water resource issues, primarily in the context of reviews by state utility regulatory commissions.

I hold a Master's in Public Administration from the University of Massachusetts at Amherst and a Bachelor's in Economics from Rutgers University. My resume is attached as Exhibit MEC-1.

Q On whose behalf are you testifying in this case?

A I am testifying on behalf of Michigan Environmental Council and Sierra Club.

Q Have you previously testified before the Michigan Public Service Commission ("the Commission")?

A Yes. I submitted testimony on behalf of Michigan Environmental Council, Natural Resources Defense Council, Sierra Club, and Citizens Utility Board of Michigan in the rate case for DTE Gas Company, U- 21291.

Q What is the purpose of your testimony?

A The purpose of my testimony is to review and critique Consumers Energy's ("Consumers" or the "Company") demand-side management investments in light of the energy transition, the Company's allocation of costs to new customers for new attachments, and its assumptions and methodology for its new connections forecast.

Q Are you sponsoring any exhibits in this proceeding?

A Yes, I am sponsoring the following exhibits:

- Exhibit MEC-1, Resume of A. Napoleon.
- Exhibit MEC-2, Discovery Response MNSC-CE-0709.
- Exhibit MEC-3, Discovery Response MNSC-CE-0039.
- Exhibit MEC-4, Discovery Response MNSC-CE-0714.
- Exhibit MEC-5, Discovery Response attachment MNSC-CE-0599_Warriner_ATT_1.
- Exhibit MEC-6, Discovery Response MNSC-CE-0595.
- Exhibit MEC-7, Discovery Response MNSC-CE-0024 and attachment 1.
- Exhibit MEC-8, Discovery Response MNSC-CE-0026 (partial – Warriner).

- Exhibit MEC-9, Discovery Response MNSC-CE-0031.
- Exhibit MEC-10, Discovery Response MNSC-CE-0018 (partial – Dreisig).
- Exhibit MEC-11, Discovery Response MNSC-CE-20 and Warriner ATT 4.
- Exhibit MEC-12, Discovery Response MNSC-CE-0585.
- Exhibit MEC-13, Part III Attachment 028, HSTART.

Q Are there any other witnesses testifying on behalf of MEC, Sierra Club, and CUB?

A Yes. Please refer to Witness Sol deLeon's testimony examining Consumers' handling of the energy transition, major infrastructure replacement programs, and handling of risk.

II. FINDINGS AND RECOMMENDATIONS

Q Please summarize your primary conclusions.

A My findings include the following:

- The continued availability of incentives for gas appliances in the Energy Waste Reduction ("EWR") programs is inconsistent with Michigan's clean energy targets because they encourage customers to lock themselves into many years of gas use when more efficient electrification options are available.
- The Company's line extension policies incentivize new customer connections by subsidizing much of the cost to connect. There is a risk that these costs will be unduly borne by existing customers.

- The Company's new connection forecasting is flawed, assuming growth rates that are inconsistent with historical data and do not consider improving equipment efficiencies and market developments that favor heat pumps. A more reasonable assumption is that the number of new connections will not grow.

Q Please summarize your recommendations.

A Based on my findings, I offer the following recommendations:

- The Commission should require the Company to eliminate EWR incentives for gas-burning equipment. The next EWR plan should fund only electrification and building envelope measures using gas ratepayer funds in order to align EWR programs with the state's climate targets.
- The Commission should order the Company to reduce the allowance for new customer line extension costs to no more than 50 percent of total costs; this will better protect ratepayers from the risk that new customer connections may not produce the revenue forecasted by the Company, reduce incentives to expand the gas system, and better align Consumers' new customers' Contributions in Aid of Construction (CIAC) policies with Michigan's emission reduction targets. Further, the Commission should order Consumers to reduce its projected test year capital expenditures (2026) for New Business accordingly, as described in this testimony.
- The Commission should order the Company to set the growth rate in new connections to zero and reduce its capital expenditures for the same line item mentioned in the previous bullet, New Business, commensurately, as

described herein. Also, the Commission should require the Company to explain and document the relationship of the new connections forecast to the load forecast.

III. DEMAND-SIDE INVESTMENTS ARE MISALIGNED WITH DECARBONIZATION OBJECTIVES

Q Please describe the Company's Natural Gas Delivery Plan.

A The Natural Gas Delivery Plan (NGDP) provides a 10-year outlook on infrastructure investments, natural gas supply and demand, and operational needs, as well as a financial summary of planned capital expenditure and operations and maintenance expenses through 2034. The plan centers around the Company's four key objectives, which are to provide service that is safe, reliable, affordable, and clean.[1] The NGDP includes the Company's discussion of its emission reduction targets and potential pathways toward decarbonization. In Appendix C of the NGDP, the Company provides some discussion of the findings from a state-wide decarbonization pathways analysis that it uses to inform which decarbonization strategies to pursue.

Q Describe the Company's emission reduction targets.

A The Company has a goal to reach net-zero methane emissions from Scope 1 sources by 2030, where Scope 1 emissions are defined as "emissions produced in the process of generating and supplying energy for customers, such as carbon emissions from burning methane or fugitive methane emissions from our natural

[1] Exhibit A-42, Natural Gas Delivery Plan (NGDP), page 15.

gas delivery system."[2,3] The Company intends to reduce 80 percent of its Scope 1 methane emissions by 2030 primarily through the replacement of leak-prone mains and services.[4] Investments to replace leak-prone pipe are discussed in the testimony of Dr. deLeon.

The Company also has the goal of reducing Scope 3 carbon emissions 20 percent by 2030 and to reach net-zero carbon emissions by 2050, where Scope 3 emissions are defined as "emissions traced to natural gas we purchase and activities by customers and suppliers, primarily from end uses like burning natural gas to heat homes and businesses."[5] The Company discusses numerous possible strategies for achieving Scope 3 emission reductions, which are loosely informed by the state-wide decarbonization pathways analysis. Consumers acknowledges the findings of the decarbonization pathways analysis and generally agrees with the need to

[2] NGDP, page 78.

[3] Data on Consumers' Scope 1, 2, and 3 emissions from its electric and gas operations combined are available in its 2024 Energy Sustainability Report, provided as Attachment 1 to Witness Dreisig's testimony. The following table is excerpted from this report.

Electric & Gas Scope 1, 2 and 3 Greenhouse Gas Emissions				
Carbon Dioxide Equivalent (CO2e)	2005	2021	2022	2023
Scope 1 CO_2e emissions (MT)	N/A	14,292,256	14,307,906	12,482,384
Scope 2 CO_2e market-based emissions (MT)	N/A	62,753	61,195	52,960
Scope 2 CO_2e location-based emissions (MT)	N/A	59,802	63,102	53,601
Scope 3 CO_2e emissions (MT)	N/A	16,881,600	23,832,385	22,652,002

Most of the Scope 1 emissions are likely from electric operations, while most of the Scope 3 emissions are likely associated with Consumers' customers gas consumption. As shown in the table above, Scope 3 emissions are larger than Scope 1 emissions in all years, and they are substantially larger than Scope 1 emissions in 2022 and 2023 after Consumers completed a review of Scope 3 emissions to improve comprehensiveness.

[4] NGDP, page 78.

[5] NGDP, page 78.

reduce emissions, but the Company does not reflect the findings from the decarbonization analysis in its investment plan.

On the demand side, these include the EWR programs as well as potentially electrification. Consumers also lists supply-focused options including renewable natural gas ("RNG"), hydrogen, and synthetic fuels, as well as other strategies such as carbon offsets and carbon capture and sequestration.[6] The only decarbonization strategies the Company is actually pursuing at present are EWR programming and a voluntary RNG program offered through the MI Clean Air Program;[7] the costs of the voluntary program are not being recovered through base rates.[8]

Q Please describe the decarbonization pathways analysis.

A The NGDP discusses findings from a state-wide decarbonization analysis. This study analyzed five scenarios that met projected demand and achieved emission reductions with different combinations of resources.

Q How did the decarbonization pathways analysis inform the Company's planning and decisions?

A Based on the decarbonization analysis, the Company concludes that continued use of the gas transmission and distribution system alongside carbon capture is the

[6] NGDP, page 79-83.

[7] Ex MEC-2, Discovery Response MNSC-CE-0709.

[8] As discussed in my testimony in the DTE rate case (U-21291), voluntary RNG programs may not be effective means of reducing GHG emissions. As such, they are problematic even if they are not included in rate base because participants may feel that their decisions to consume more gas, or to remain on gas, are environmentally friendly choices. In this way, a customer-facing RNG program could work against the state's efforts to reduce GHG emissions.

most cost-effective solution to achieving decarbonization.[9] The analysis finds that a 'balanced scenario' with hybrid electric heating and gas backups mitigates electric winter peaks in the future, saving $20–$25 billion dollars compared to a scenario with full electrification.[10]

Appendix C to the NGDP recommends a scenario that features hybrid electric and gas space heating as a prominent strategy in the balanced scenario;[11] however, the Company has stated that it "does not have current plans to deploy or support hybrid heating through 2030 and 2050." [12] The only electrification measure the Company has indicated it might investigate is networked geothermal.[13] The pathways analysis also finds that RNG will play a primary role in decarbonization under the balanced scenario. In the NGDP, the Company states that RNG will be a "fundamental technology" for reducing emissions in a cost-effective way because it does not require making any incremental investments to the gas system.[14]

Q Why did the study find that full electrification is more expensive?

A It is not clear. While I reviewed the pathways analysis, there is an insufficient level of detail on assumptions and methodology to explain this conclusion. Consumers did not provide detailed findings and assumptions from the decarbonization study

[9] NGDP, page 91.

[10] NGDP, page 91.

[11] NGDP, page 91.

[12] Ex MEC-3, Discovery Response MNSC-CE-0039.

[13] Ex MEC-4, Discovery Response MNSC-CE-0714.

[14] NGDP, page 91.

because it was conducted by a third-party consultant.[15] However, the Company conveyed that the balanced scenario was identified as the optimal decarbonization pathway because it (1) has the lowest cost for achieving decarbonization targets (from an economy-wide perspective), (2) has the least impact to existing electric infrastructure, (3) poses less risk associated with hydrogen blending than other scenarios, and (4) leverages carbon capture. Thus, the study claims, the balanced scenario would avoid "the build out of nuclear energy as load increases" in the high electrification pathway.[16]

Q Do you find this study to be persuasive?

A No. As described in the attachment to Dr. deLeon's testimony, numerous other states have conducted pathways studies that come to vastly different conclusions about the ability of strategies that rely on hybrid electric and gas space heating to meet decarbonization goals. These include, but are not limited to, Massachusetts, New York, and Maryland. I do not know the specific reason(s) why the Michigan study identified the balanced scenario, which relies on hybrid electric and gas space heating, as the optimal decarbonization pathway; however, I expect that the study inappropriately assumed high levels of pipe replacement in all scenarios, consistent with *status quo* operations, but only electric system build-out in the high electrification scenario. Doing so would bias the study by inappropriately attributing high electric system build-out costs to the high electrification scenario

[15] Discovery Response MNSC-CE-0038.

[16] Discovery Response MNSC-CE-0707.

while not giving this pathway credit for pipe replacement that targeted electrification could avoid.

Further, nowhere does the decarbonization study recommend demand-side measures such as energy efficiency or demand response to reduce emissions. Demand-side measures are essential components of decarbonization studies in other states, so it is puzzling why the Michigan study apparently did not include them.

In addition, the Michigan decarbonization study refers to carbon capture in the balanced scenario. Carbon capture and storage is cost-prohibitive for addressing emissions of individual gas consumers.

Q Is the Company requesting cost recovery for demand-side investments in this filing?

A No. The Company has not proposed any demand-side measures within this filing.

Q What are the Company's proposed investments for the EWR programs?

A The Company received approval in Case No. U-21321 to recover $190 million of gas demand-side program investments for its 2024–2025 EWR plan through surcharges.[17] As shown in Table 1, Consumer's EWR portfolio is projected to achieve 1 percent annual natural gas savings. Planned first-year gas savings reflect the volume of gas saved by measures installed in that year.

[17] Michigan Public Service Commission, Order Approving Amended Settlement Agreement, Case U-21321, October 10, 2024, available at: https://mi-psc.my.site.com/sfc/servlet.shepherd/version/download/068cs00000Ev5PWAAZ.

Table 1. EWR programs planned investment and energy savings

	2023 (actual)	2024	2025
Gas Program Investment	$99,111,306	$95,487,640	$95,066,407
Planned First-Year Gas Savings (MMcf)	3,752	2,934	2,944
Projected Gas Retail Sales (MMcf)	282,317	N/A	308,126
Planned Gas Savings (% of total)	1.3%	1.0%	1.0%

Source: NGDP Table 7, page 85; Projected Gas Retail Sales (MMcf) values taken from Exhibit A-5 (MA-1) and (MA-5).

Q Please describe the Company's Energy Waste Reduction program.

A Through EWR programs, natural gas utilities in Michigan are required to achieve annual savings of 0.75 percent of total retail sales through 2025, and 0.875 percent of total retail gas sales starting in 2026.[18]

The EWR plan includes both gas and electric measures. The program offers to both gas and electric customers many of the same measures. These include low-flow showerheads and faucet aerators; pipe wrap and air sealing; attic, duct, crawlspace and wall insulation; and Wi-Fi controllable and programmable thermostats. EWR offerings available to gas customers only include gas furnaces and tankless and power-vented water heaters. For electric customers, the Company offers incentives for air-source and mini split heat pumps, heat pump water heaters, central air conditioners, and other measures.[19]

[18] State of Michigan, Public Acts of 2023, Act No. 229 (Public Act 229), effective February 13, 2024, available at: https://legislature.mi.gov/documents/2023-2024/publicact/pdf/2023-PA-0229.pdf.

[19] Consumers Energy 2024-2025 Energy Waste Reduction Plan. August 1, 2023. MPSC Case No. U-21321.

Q Does the Company offer customers incentives to electrify their building end uses?

A No, Consumers does not offer natural gas customers any electrification incentives—such as for installing heat pumps to replace gas heating systems—through the EWR programs or otherwise.

Q Could the Company offer its customers incentives for building electrification?

A Yes. Public Act 229 provides the Company with new opportunities to earn an incentive from supporting customers transitioning from gas to efficient electric heating equipment. Under this Act, a gas utility can claim gas savings resulting from investments in qualifying efficient electrification measures or envelope efficiency improvements in support of electrification projects towards its gas savings targets.[20]

Q If the Company were to offer electrification incentives, should these incentives be offered through the existing EWR programs?

A Not necessarily. Electric energy efficiency programs focus on electric savings only, with goals in terms of reducing MWh, but electrification will increase electric loads rather than produce electric savings. Thus, while electrification

[20] Public Act 229, Sec 77(6): "A natural gas provider may claim natural gas savings resulting from investments in qualifying efficient electrification measures, or investments in building envelope efficiency improvements made as part of projects involving qualifying efficient electrification measures, if the savings are not also counted toward an electric utility's savings goals. When a natural gas provider and an electric provider are both involved in a qualifying efficient electrification measures project, including a project that involves both building envelope efficiency and qualifying efficient electrification measures, the providers shall work together to reach an agreement on how savings claims will be allocated between the providers. The commission may adopt standards or default provisions for the allocation of savings claims between providers that apply if the providers are unable to reach an agreement."

produces gas savings, it works against the goals of the current electric EWR programs. A holistic energy efficiency program would need to consider total combined gas and electric consumption and adopt to fuel-neutral goals (MMBtu) for all measures to accurately account for efficiency-related savings from electrification: i.e. it would look at the efficiency of *energy use* rather than *gas use*.

On the other hand, there are reasons why it makes sense to operate an energy efficiency program and electrification program cooperatively. Energy efficiency and electrification programs can leverage the same outreach dollars to maximize the number of customers reached. Implementers of energy efficiency (particularly for HVAC measures) and building electrification programs both require expertise in building science. And, electrification and energy efficiency programs should work together towards achieving the desired end state of the building; this consideration can help ensure that space heating measures such as heat pumps are sized appropriately and avoid the higher up-front costs associated with oversized heat pump systems.

Q Do energy efficiency programs typically provide electrification measures?

A Historically it was not common for utilities with energy efficiency programs to offer incentives for fuel-switching, however it is becoming more common. For example, Mass Save, the energy efficiency administrator in Massachusetts, offers heat pump incentives to customers with electric, gas, or other fuels.[21] The District

[21] Massachusetts Department of Public Utilities D.P.U Docket 21-120 through 21-129, January 31, 2022, available at: https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/14461268.

of Columbia's energy efficiency program administrator, the Sustainable Energy Utility, offers higher electrification incentives to gas and oil consumers.[22]

Q Do you have other comments on the gas EWR programs?

A Yes. Incentivizing the installation of gas appliances locks in that household's gas consumption for decades, making it more difficult to meet building decarbonization goals. Many gas appliances, and many of the gas energy efficiency measures incentivized by the EWR programs, have long useful lives.[23] For example, a new natural gas furnace typically lasts 20 or more years. For some existing heating equipment such as boilers, the useful life is longer. This means that the opportunity to change some gas measures, such as a heating system, comes very infrequently for many customers (particularly those who lack the ability or financial means to switch their systems early).

Replacing a gas measure in kind (with another gas appliance), which is what the current EWR programs does, perpetuates reliance on the gas system for years or decades into the future. This effectively means that some decarbonization options are not available for customers who received new gas equipment for that period, unless customers are offered higher incentives to replace the equipment before the end of its useful life. In contrast, converting a customer from natural gas to electric heating and cooling near the end of the gas equipment's useful life will be less

[22] District of Columbia Sustainable Energy Utility. Apply for Residential Rebates. https://www.dcseu.com/residential-rebates/apply#:~:text=down%20to%20forms-,Application%20Guide,ups%20and%20electric%20circuit%20additions. Accessed April 17, 2025.

[23] Consumers Energy 2024-2025 Energy Waste Reduction Plan, Case U-21321, submitted August 1, 2023, available at: https://mi-psc.my.site.com/sfc/servlet.shepherd/version/download/0688y000008yCJ8AAM.

expensive for ratepayers, since customers with relatively new gas equipment are unlikely to convert to electric without higher incentives to compensate for the loss of the useful life of the existing equipment.

Also, as a component of a strategy that relies on hybrid heat pumps with gas back-up to meet net-zero emissions, it is likely that more efficient gas equipment will not be cost-effective. This is because gas equipment will be used so little in this scenario, and the additional cost of the high efficiency gas equipment may not be recovered in savings that accrue during just a few hours per year.

In recognition of this reality, some states have ended incentives for gas appliances. In Massachusetts, to align with the 2021 Climate Act, the utilities have discontinued rebates, incentives, and financing for natural gas, oil, and propane.[24] Likewise, the District of Columbia ceased offering incentives for gas-only measures.[25]

Q Do you have other comments on Consumers' approach to electrification and demand-side management?

A Yes. When geographically targeted, electrification and demand-side management programs can save costs by avoiding traditional infrastructure investments, such aging pipe replacements.

[24] MassSave. 2024 Discontinuation of Rebates and Incentives for Natural Gas, Oil, and Propane Heating Equipment. Available at: https://www.masssave.com/blog/residential/discontinuation-of-rebates-and-incentives-natural-gas-oil-propane-heating-equipment.

[25] Building Electrification Institute. Washington, DC. https://beicities.org/washington-dc#:~:text=Building%20in%20part%20on%20BEI's%20customer%20economics,investments%20strongly%20encourage%20electrification%20across%20the%20District.

Q What are non-pipeline alternatives?

A As discussed in Dr. deLeon's testimony, non-pipeline alternatives ("NPA") are solutions that meet customer energy needs and are alternative to traditional infrastructure investments. NPA portfolio components include demand-side measures such as electrification, energy efficiency, and other measures that reduce or eliminate customers' demand for natural gas. By decreasing gas combustion, NPAs reduce emissions and can provide health benefits associated with improved indoor air pollution.

Q Is Consumers proposing to implement any NPAs at this time?

A No, Consumers is not proposing to implement any NPAs in place of pipe replacement, new customer connections, or other traditional infrastructure investments. Nor is the Company assessing opportunities to implement NPAs within its current planning processes.

Q What are your recommendations?

A Prior to the next EWR Plan, due to be filed this summer, the Commission should initiate a process to reconsider the measures of the EWR programs in order to align them with the state's climate targets, to account for the greater efficiency of electrification measures relative to gas. (That is, heat pumps commonly have efficiencies of 200 to over 300 percent, reaching as high as 440 percent, while gas furnaces top out at about 98 percent efficiency.[26]) Rather than promoting gas-

[26] Paige Jadun, Colin McMillan, Daniel Steinberg, Matteo Muratori, Laura Vimmerstedt, and Trieu Mai. 2017. Electrification Futures Study: End-Use Electric Technology Cost and Performance Projections through

burning equipment that constrains consumers' ability to choose alternatives such as electrification, as the Company is currently doing, the focus of the gas efficiency program should be on electrification measures as well as weatherization and building envelope measures. Also, as discussed in Dr. deLeon's testimony, the Commission should require consideration of NPAs.

Q Why are you recommending a change to EWR programs in this docket, rather than in the docket that will be opened when the new EWR plan is filed?

A The EWR plan savings and design are relevant in this rate case, since they inform Consumers' investment plan. Furthermore, Consumers' decarbonization strategy is based on the EWR plan, which is currently aimed in the wrong direction in terms of achieving climate targets.

IV. THE COMPANY'S LINE EXTENSION POLICIES SUBSIDIZE NEW GAS CONNECTIONS

Q Please describe the Company's new business program.

A The new business program is comprised of three subprograms: the Customer Attachment Program; Large New Business; and Mains, Services, and Meter Stands. The Customer Attachment Program, which ended in 2019, was designated to convert customers to natural gas—any remaining costs incurred as this program

2050. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-70485. Figure 20. Available at: https://www.nrel.gov/docs/fy18osti/70485.pdf;

Brand, L. and W. Rose. 2012. Measure Guideline: High Efficiency Natural Gas Furnaces. U.S. Department of Energy for The National Renewable Energy Laboratory. Available at: https://www.nrel.gov/docs/fy13osti/55493.pdf#:~:text=A%2520link%2520to%2520the%2520DOE%2520EIA%2520Energy,efficiency%2520furnaces%2520have%2520an%2520AFUE%2520of%252090%25%252D98%25.

winds down will be tracked under Mains, Services, and Meter Stands category.[27] The Large Business Program is for new connections projected to exceed $500,000.[28] All other expenditures appear to fall under the category for Mains, Services, and Meter Stands. Table 2 shows historical expenditures for the entire New Business program.

Table 2. New Business historical expenditure (nominal dollars)

	2019	2020	2021	2022	2023
New Business ($000)	$86,498	$87,021	$55,373	$74,088	$76,320

Source: Testimony of Lincoln D. Warriner, p. 9.

Q What are the Company's proposed investments for new customer connections?

A The Company proposes to spend $184 million on new business between 2024 and 2026,[29] which is a 12.7 percent decrease from historical expenditure as Witness Warriner points out.[30] However, the Company is forecasting a stable, slightly increasing number of new connections annually despite the historical declines in numbers of new connections.[31]

[27] Direct Testimony of Company Witness Lincoln D. Warriner, page 16 and 21.

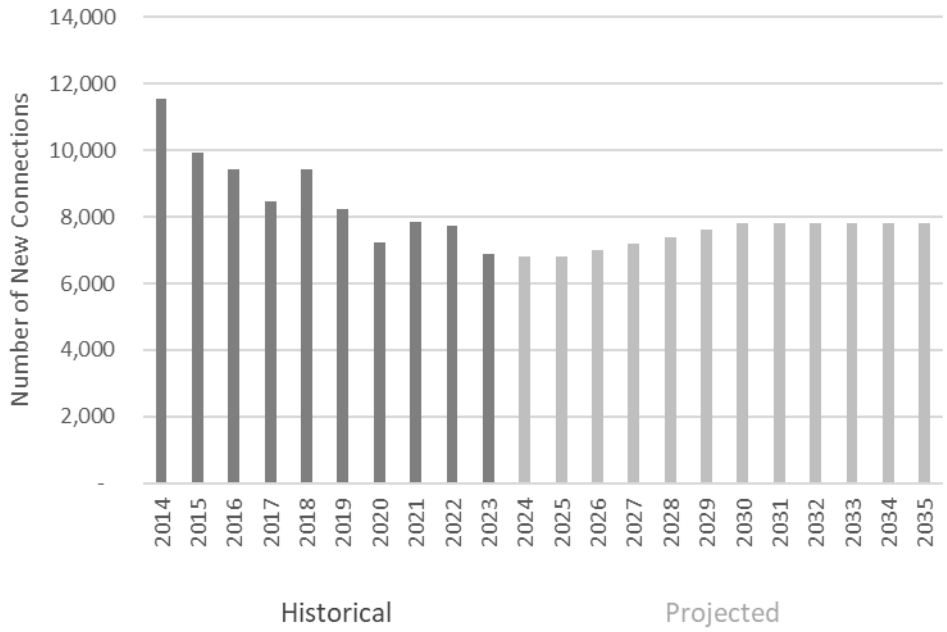
[28] Warriner Testimony, page 22.

[29] Warriner Testimony, page 12.

[30] Warriner Testimony, page 8.

[31] NGDP, page 60.

Figure 1. New customer connections



Source: NGDP, page 60.

Q What are the Company's customer attachment policies and practices?

A The residential gas-only footage allowance for new connections in 2025 is 117 feet, or 152 feet for joint gas and electric hookups.[32] Footage allowances increased from 2024 when gas-only allowances were 88 feet and joint gas and electric allowances were 124 feet.[33] Longer footage allowances result in lower costs for new customers and greater costs spread across ratepayers. There are no footage allowances for commercial customers.[34]

Residential customers who exceed the footage allowance are responsible for a flat $200 revenue deficiency charge, an excess footage charge for gas-only connections of $21.26 per foot beyond the footage allowance ($17.28 for joint

[32] Ex MEC-5, Discovery Response attachment MNSC-CE-0599_Warriner_ATT_1.

[33] Ex MEC-5, Discovery Response attachment MNSC-CE-0599_Warriner_ATT_1.

[34] Ex MEC-6, Discovery Response MNSC-CE-0595.

gas and electric hookups),[35] and a connection fee and direct charges for things such as permitting and inspections.[36] In lieu of the simplified $200 charge, non-residential customers are responsible for a revenue deficiency charge that considers the cost of the connection and future revenues from the new customer.

Q Please characterize Consumers' historical line extension costs and customer contributions in aid of construction.

A Table 3 shows the Company's actual costs incurred from new connections (excluding large business), the amount of costs covered by customers who paid a contribution for their new connection, and the share of total costs socialized across ratepayers. On average, new customers pay about 10 percent of line extension costs upfront, and the rest is covered by the Company in its rates. This arrangement means that the investment risk is initially borne by ratepayers: if new customers do not remain on the gas system for as long as the Company projects, or if new customers do not purchase gas in the quantities that Consumers expects, then remaining customers will be left to cover the costs. If the customer disconnects from the gas system sooner than expected by the Company, the costs of connection are sunk.

[35] Ex MEC-6, Discovery Response MNSC-CE-0595.

[36] Ex MEC-7, Discovery Response MNSC-CE-0024 and attachment 1.

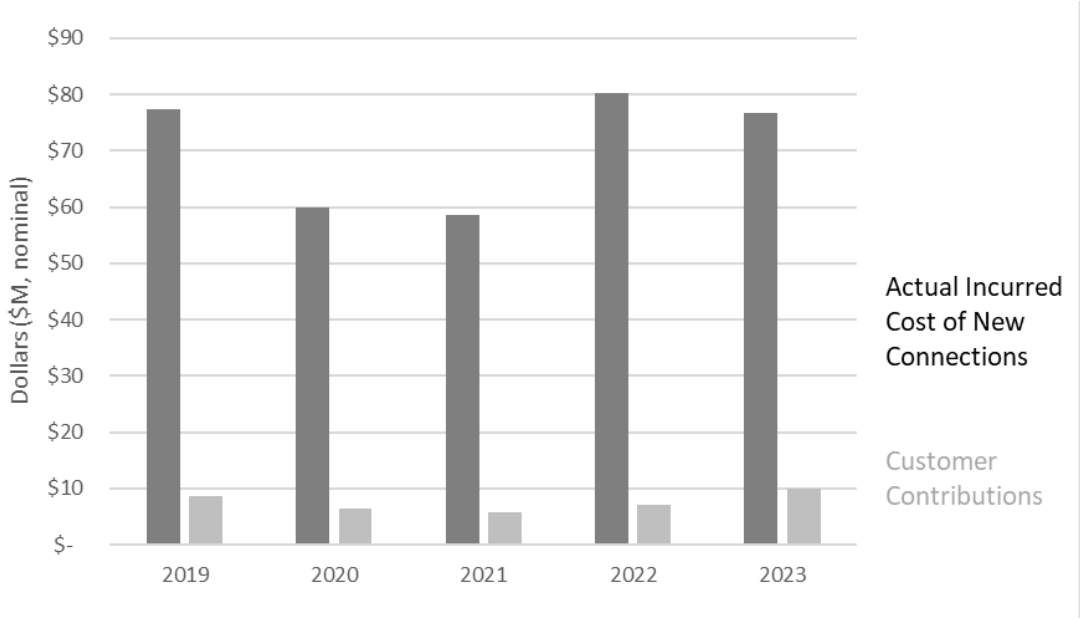
Table 3. New connections: number, costs (nominal dollars), and percent of costs covered by ratepayers

	2019	2020	2021	2022	2023
Number of New Connections	8,223	7,236	7,861	7,719	6,870
Actual Incurred Costs of New Connections ($000)	$77,298	$59,905	$58,670	$80,283	$76,800
Customer Contributions ($000)	$8,714	$6,325	$5,703	$7,042	$9,852
Percent of Total Connection Costs Borne by Ratepayers	89%	89%	90%	91%	87%

Source: Ex MEC-7, MNSC-CE-0024.

Note: values exclude new connections for large businesses.

Figure 2. Cost of new connections (millions of nominal dollars), 2019-2023



Source: Ex MEC-7, MNSC-CE-0024.
Note: values exclude new connections for large businesses.

Q What are Consumer's assumptions for calculating revenue deficiency charges for residential customers?

A The Company calculates a revenue deficiency charge for new connections that exceed the footage allowance. For residential customers, this is a flat $200 charge. By default, Consumers assumes that new customer sales will be equivalent to the three-year historical average sales for that customer class, and the customer will remain connected to the gas system for 20 years.[37]

Q How was the $200 flat charge for residential customers determined?

A It is not clear how this was determined and what it covers.

Q How was the excess footage charge for residential customers calculated?

A Consumers states that is calculates the excess footage charge as the incremental cost associated with the installation of an additional foot of service past the length of the allowance.[38] As of March 1, 2025, the Company charges residential customers a fixed excess footage charge of $21.26 for gas-only connections and $17.28 for joint gas and electric connections. The Company states that these fixed charges were calculated in the same way as described above.[39] However, it is unclear what data Consumers used to produce these calculations, how frequently the Company updates excess footage charges, and why Consumers decided to switch to a fixed model in the first place.

[37] Ex MEC-8, Discovery Response MNSC-CE-0026 (partial – Warriner).

[38] Ex MEC-6, Discovery Response MNSC-CE-0595.

[39] Discovery Response MNSC-CE-0772.

Q What are Consumer's assumptions for calculating revenue deficiency charges for non-residential customers?

A For non-residential customers, the Company calculates revenue deficiency as the net present value of line extension costs minus expected future revenues from the new customer. Consumers takes into account equipment specifications, load diversification, and annual usage patterns to calculate a constant level of new customer sales, and the Company assumes the customer will remain connected to the gas system for twenty years.[40]

Q Does the Company use a model for estimating the revenue deficiency?

A Yes, but Consumers has not provided the model, despite the terms of the U-21148 settlement which called for Consumers to transition to a new model that was transparent and capable of being shared with stakeholders by the end of 2022.[41] Without this model, it is difficult to ascertain the adequacy of the model for its intended purpose. That is, is the new connection likely to be financially neutral for ratepayers within the period that the new customer is assumed to remain on the system (i.e. 20 years) and assuming the new customer's gas consumption is equal to the rate-class average?

Q Is it reasonable to assume new customers will stay on the system for 20 years?

A No. As discussed in the testimony of Dr. deLeon, the Company is proposing large capital investments in its system. With large investments in the gas system pushing

[40] Ex MEC-7, Discovery Response MNSC-CE-0026 (partial – Warriner).

[41] Michigan Public Service Commission. 2022 (July 7). Order Approving Settlement Agreement. Case No. U-21148. Attachment A: Settlement Agreement, p. 4.

up gas rates, as well as market shifts and policies that favor electrification, many customers who have the financial means to electrify their end uses will do so and may leave the gas system.

Q Is it reasonable to assume new customers will purchase as much gas as existing customers?

A No. Given overall declines in gas consumption for residential customers and trends in heating equipment toward electrification, as discussed in Section V, it is unlikely that the historical average consumption for all residential customers accurately predicts new customer usage. Many new connections are for new construction. In new construction, electric options are generally competitive with or lower cost than gas alternatives.[42] If, for example, new customers seek gas for cooking but elect highly efficient heat pumps for space heating, then it is unlikely that ratepayers will recoup the costs of connecting that customer for many years.

Q Does Consumers track whether actual usage and revenue conform to or are even within range of the assumptions?

A No.[43]

[42] Heat pumps are usually the lowest-cost option for newly constructed homes, since a heat pump can avoid the need for a furnace and an air conditioner. (RMI, The Economics of Electrifying Buildings: How Electric Space And Water Heating Supports Decarbonization of Residential Buildings, 2018.) Also, Lawrence Berkeley National Laboratory and National Renewable Energy Laboratory found that 59% of homes with gas heating and a central AC would produce overall savings if retrofit with heat pump (Figure S7, Wilson et al., Heat pumps for all? Distributions of the costs and benefits of residential air-source heat pumps in the United States. Joule 8, 1000–1035 April 17, 2024. Published by Elsevier Inc. Available at https://doi.org/10.1016/j.joule.2024.01.022.)

[43] Ex MEC-9, Discovery Response MNSC-CE-0031.

Q Why should Consumers track actual usage and revenue from new connection customers?

A Without tracking this information, there is no way for Consumers or the Commission to know whether the Company's revenue deficiency calculations are accurate. If Consumers is overestimating new customer revenues, that means it is undercharging new customers for construction costs, and remaining ratepayers are left shouldering the burden resulting from inaccurate allocation methods. A more prudent action is to track, analyze, and report new customer consumption and regularly revise assumptions for calculating new customer contributions to reflect actual customer revenues.

Q What are the implications of the Company's line extension policies?

A The Company's line extension policies incentivize new customer connections by subsidizing the true cost of gas line extensions. They do this by (a) providing a line extension allowance and (b) using likely outdated assumptions for household gas consumption and the number of years a new customer is expected to remain on the system. There is significant risk associated with the Company's decision to subsidize new customer connections, made worse by the uncertainty of future consumption levels and the period of time a new customer will remain on the system. This risk falls almost entirely on existing ratepayers, who pay most of the upfront costs of new connections.

Q Did the Commission address this issue in the DTE Gas case?

A Yes. The Commission declined to order a change in DTE's CIAC but expressed clear concern about the disconnect between CIAC methods and the energy transition or declining gas use. Further, the Commission ordered DTE Gas to "provide a thorough justification for its CIAC and CAP methodology, including whether it is appropriate to revise its assumptions to include declining gas demand, customer adoption rates for the CAPs based on historical experience when calculating new attachment surcharges, and how the company intends to avoid subsidization by existing customers" in its next general rate case.[44]

Q Are you aware of other states that have eliminated or reduced line extension allowances?

A Yes. In states like California and Colorado, Commissions have eliminated these subsidies entirely for residential customers, partly because of concerning assumptions about continued gas demand.[45,46] In Oregon, the Commission ordered NW Natural to step down its allowance to three times annual margin revenue generated by the new non-residential customer.[47]

[44] Michigan Public Service Commission, Order, In the Matter of the Application of DTE Gas Company for Authority to Increase its Rates, Amend its Rate Schedule and Rules Governing the Distribution and Supply of Natural Gas, and for Miscellaneous Accounting Authority, Case No. U-21291, November 7, 2024.

[45] California Public Utility Commission, Decision 22-09-026 in Rulemaking 19-01-011, September 15, 2022, available at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M496/K987/496987290.PDF.

[46] Colorado Senate Bill 23-291, Section 5, 40-3.2-104.3, available at: https://leg.colorado.gov/sites/default/files/2023a_291_signed.pdf.

[47] Public Utilities Commission of Oregon. Order No. 22-388 in case UG 435. October 24, 2022.

Q Do you have any recommendations?

A Yes. I recommend that the Commission order the Company to reduce the allowance for new customer line extension costs to 50 percent of total costs, starting with the test year. Doing so would better protect ratepayers from the risk that new customer connections might not produce the revenue forecasted by the Company. Further, it would reduce incentives to expand the gas system and thereby better align Consumers' CIAC policies with Michigan's emission reduction targets.

Q What is the impact of this recommendation on the Company's projection of gas distribution capital expenditures?

A The Company projects test year New Business capital expenditures for the 12 months ending 10/31/2026 of $66,645,000.[48] Reducing this projection to cover only 50 percent of new connection costs results in revised, projected test year New Business capital expenditures of $37,025,000.[49] The Commission should order the Company to reduce its New Business capital expenditures for the test year to this amount.

Q Why do you recommend reducing the allowance to 50 percent specifically?

A Consumers did not provide the revenue deficiency model, which limited my ability to quantify a fraction with a basis in the data. Nevertheless, new customers should be responsible for much more than they are currently paying toward

[48] Exhibit No. A-12, Schedule B-5.9 (LDW-1).

[49] Consumers has been covering roughly 90 percent of average new connection costs. To adjust the current average coverage to 50 percent, I multiplied $66,645,000 by 50%/90% to get $37,025,000.

connection costs. Given the emission reduction targets and in fairness to existing ratepayers, it may be appropriate to eliminate the allowance entirely, as other states have done. However, in the interest of conservatism and gradualism, I propose an allowance of 50 percent.

V. NEW CONNECTION FORECASTING APPEARS TO BE FLAWED AND IS INCONSISTENT WITH DECARBONIZATION POLICIES

i. Load forecasting

Q What level of gas load growth is the Company projecting and how does this forecast compare with historical growth rates?

A As shown in Table 4, the forecast compound annual growth rates (CAGR) of residential and industrial sales are slightly higher than recent historical data, while for the commercial sector Consumers' forecast growth rate is slightly lower than historical growth.[50]

Table 4. Historical and forecast growth of weather-normalized deliveries by customer class

	Historical CAGR (2016–2023)	Forecast CAGR (2025–2029)
Residential	-0.3%	-0.1%
Commercial	0.3%	-0.1%
Industrial	-2.3%	-1%

[50] Calculation of CAGR from 5-Year Forecasted Natural Gas Cycle Deliveries and Customer Count by Class, Part III – Standard Filing Requirements, Attachment 015 and Attachment 016.

Q How did the Company estimate the load forecast?

A The Company used econometric regression models to estimate its dependent variables, customer count, and gas delivery by "class (residential, commercial, and industrial) and service type (sales and transportation)."[51]

Q What is a regression model?

A Regression models estimate the relationship between a dependent variable and independent variables using historical data. The estimated relationship, called a coefficient, is then applied to forecast independent variables to estimate the value of the dependent variable in the forecast period.

Q How does the Company measure the fit of its regression model?

A Consumers measured how well the regression models estimate the relationship between independent and dependent variables using an adjusted coefficient of multiple determination (R_{α}^{2}) and Mean Absolute Percent Error (MAPE).[52] Additionally, t-statistics and p-values indicate whether independent variables are statistically significant.[53] The models provided in Part III Attachment 027 incorporate statistically significant independent variables, and each model provides a high R_{α}^{2} and low MAPE, indicating that the models provide a reasonably good fit.

[51] Direct Testimony of Company Witness Mustafa Ahmed, p. 3 line 18-19.

[52] Ahmed Direct Testimony, p. 6, line 18-21.

[53] Ahmed Direct Testimony, p. 7, line 15-21.

Q What issues do you have with how the Company conducts its regression modeling?

I have concerns with the lack of incorporation of out-of-sample data in the review of the regression models as well as the lack of incorporation of the effects of Senate Bill 273.

Q Should the Company incorporate out-of-sample data into its regression modeling?

A I believe that the Company should incorporate estimates of out-of-sample historical data when constructing its regression model. The regression model currently contains each year of the independent and dependent variables, leaving no data out of the sample that was used to estimate the regression models. By not incorporating out-of-sample data into the regression model, the Company is missing out on the ability to assess how the regression model performs on data not included in the regression periods.

Witness Ahmed states that the Company's forecasting methods are accurate partially as demonstrated against historical results.[54] However, the historical data used to estimate the regression model is the same historical data which the regression is being judged against. Thus, it does not demonstrate great performance relative to actual historical data as it is within the regression data sample.

[54] Ahmed Direct Testimony, p. 8, line 1 – 4.

Q Please explain how Public Act 229 affects Consumers' forecasting.

A Public Act 229, enrolled as Senate Bill 273, allows both gas companies and electric companies to implement electrification measures, starting on January 1, 2025.[55] This provision can help households and businesses using gas heating switch to electric heating, leading to substantial reduction in gas use in the coming years. Consumers stated, "Given that Senate Bill 273 has not passed, the Company views it as a signpost to monitor and has not performed a full analysis on its potential impacts to natural gas sales."[56] However, this bill was in fact passed on November 28, 2023 and became effective on February 13, 2024.[57] With the passage of Senate Bill 273 as Public Act 229, Consumers should be able to save more gas if such measures can provide annual average energy cost savings.[58] The passage of this Act affects all aspects of Consumers operations over the forecasting period of 2025–2029.

Q Please explain how the new connections forecast differs from the total residential sales customer count forecast.

A As I explain below, the Company separately forecasts the number of new connections. The new connections forecast is conducted independently of the total customer count forecast and is not used in estimating the total customer count

[55] Senate Bill 273 of 2023 (Public Act 229 of 2023). Available at: https://www.legislature.mi.gov/Bills/Bill?ObjectName=2023-SB-0273.

[56] Ex MEC-10, Discovery Response MNSC-CE-0018 (partial – Dreisig).

[57] Senate Bill 273 of 2023 (Public Act 229 of 2023). Available at: https://www.legislature.mi.gov/Bills/Bill?ObjectName=2023-SB-0273.

[58] Senate Bill 273. Section 72(1)(c) and Section 77(6)

forecast or total sales forecast.[59] That is, the historical total customer count used to forecast total customers changes by net new customers every year. However, the total customer count forecast does not incorporate information from the new customer forecast into the total customer forecast. The Company should clarify why it does not incorporate information from its new customer forecast into its total customer forecast.

ii. New connection forecasting

Q What did the Company assume for new connections?

A Consumers assumed a 3 percent annual growth rate for new connections from 2026 through 2030, except for 2029, when it assumes no growth.[60] Consumers states that the housing market is anticipated to grow, driven by anticipated reductions in inflation rates and mortgage rates, and that this projected growth is the main reason for its assumed 3 percent growth rate.[61] This implies that low inflation rates and low mortgage rates would support a high growth rate of 3 percent for customer connection. However, Consumers also stated that "No specific analysis or detailed assumptions were utilized to develop that estimated growth rate."[62]

[59] Discovery response MEC-CE-0723 a. – c.

[60] Ex MEC-11, Discovery Response MEC-CE-20 Warriner ATT 4.

[61] Ex MEC-11, Discovery Response MEC-CE-20 Warriner ATT 4.

[62] Ex MEC-12, Discovery Response MEC -CE-0585, part c.i.

Q Are there any issues with the Company's forecasts for new connections?

A Yes. First, the Company's assumption for new connections contradicts the historical trend of customer connections. As shown in Figure 1 above, while the Company has continued connecting new customers since 2024, the number of new customer connections has declined significantly—from approximately 11,500 in 2014 to 6,870 in 2023—representing an average annual decrease of 6 percent. Between 2014 and 2020, prior to the pandemic, 30-year fixed mortgage rates remained around 4 percent, while inflation averaged between 1.5 and 2 percent (with the exception of 2015).[63] Notably, even during this period of relatively low mortgage rates, the number of new customer connections in Consumers' service territory continued to decline. Today, mortgage rates have risen to approximately 7 percent.[64] The Company projects a 3 percent annual increase in new customer connections, based on the assumption that both inflation and mortgage rates will decline in the coming years. However, even if mortgage rates were to halve to 3.5 percent, this value would still align with historical periods during which customer connections were decreasing. As such, the Consumers' assumption of a significantly increased gas connection rate of 3 percent is not supported by historical data.

Second, the HSTART value used to develop the total residential customer count forecast has negative growth during the forecast period of 2025–2029 with a

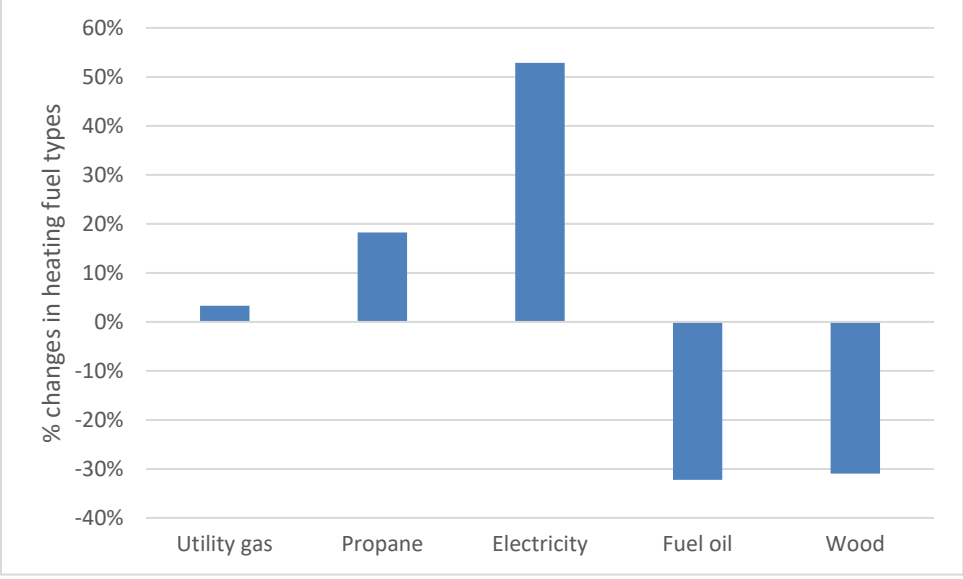
[63] FRED Economic Data. "30-Year Fixed Rate Mortgage Average in the United States" Available at: https://fred.stlouisfed.org/series/MORTGAGE30US; FRED Economic Data. "Inflation, consumer prices for the United States." Available at: https://fred.stlouisfed.org/series/FPCPITOTLZGUSA.

[64] FRED Economic Data. "30-Year Fixed Rate Mortgage Average in the United States" Available at: https://fred.stlouisfed.org/series/MORTGAGE30US

CAGR of -1.47 percent, indicating that housing starts are not expected to grow during the forecast period.[65] The HSTART variable is not defined but presumably measures the amount of housing starts in the defined time period on an indexed basis.

Third, Consumers' forecast does not reflect recent market trends or policies, either. Over the past decade, the adoption of new electric heating has increased considerably, while the adoption of new gas heating has declined. According to the U.S. Census Bureau's American Community Survey, the number of Michigan households using electric space heating increased by 53 percent in 2023 relative to 2014. In contrast, households using utility gas heating grew by only 3 percent, and those using propane increased by approximately 19 percent during the same period, as shown in Figure 3 and Table 5. Meanwhile, the number of households using wood or fuel oil for space heating declined substantially—by 31 percent and 32 percent, respectively.

Figure 3. Changes in heating fuel types relative to 2014 (% change)



[65] Ex MEC-13, Part III Attachment 028, HSTART.

Source: American Community Survey, Michigan Summary. https://data.census.gov/table/ACSDP1Y2014.DP04?g=040XX00US26 and https://data.census.gov/table/ACSDP1Y2023.DP04?g=040XX00US26.

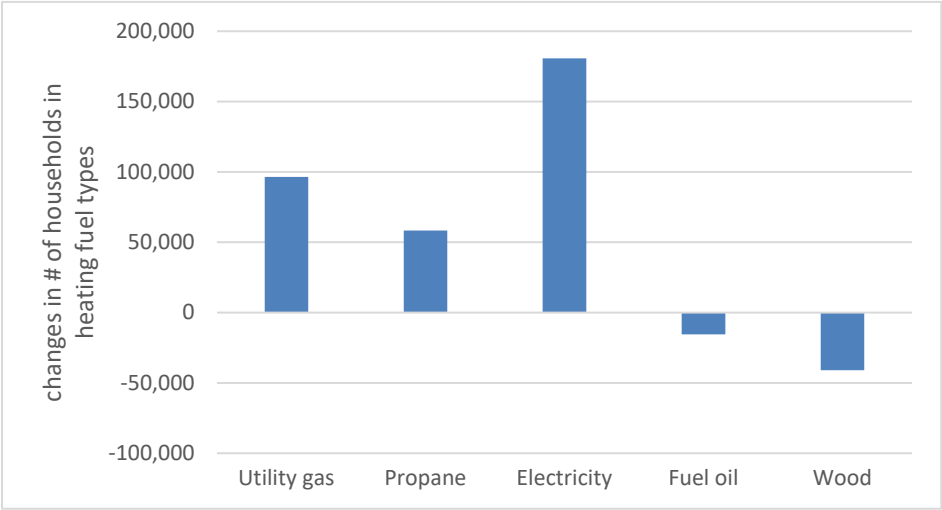
Table 5. Michigan heating fuel types, 2023 and 2014, in number of households, percent change, and annual growth rates

	2023	2014	Changes in heating fuel types (# of households)	Changes in heating fuel types (%)	Annual growth rate
Utility gas	3,039,167	2,942,704	96,463	3%	0.4%
Propane	372,796	314,434	58,362	19%	1.9%
Electricity	523,137	342,353	180,784	53%	4.8%
Fuel oil	32,099	47,572	-15,473	-33%	-4.3%
Wood	88,484	129,455	-40,971	-32%	-4.1%
Other*	52,126	58,056	5,930	10%	1.2%

*Note: *includes solar, no fuel used, coal or coke, and other fuel.*

Figure 4 below shows the change in the number of households by heating fuel type between 2014 and 2023. During this period, the number of gas-heated homes increased by approximately 96,000, while electric-heated homes increased by about 180,000—nearly twice as much. This indicates a clear trend of households increasingly choosing electric heating over gas heating in the past decade.

Figure 4. Changes in heating fuel types relative to 2014 (number of households)



Source: American Community Survey, Michigan Summary. https://data.census.gov/table/ACSDP1Y2014.DP04?g=040XX00US26 and https://data.census.gov/table/ACSDP1Y2023.DP04?g=040XX00US26.

Q What do you find with respect to the new connections forecast?

A I find that the methodology for the new connections forecast is flawed and is unlikely to reflect future connections. Further, I find that the Company has failed to provide justification for its assumption that new connections will grow by 3 percent per year. A more reasonable assumption for the growth rate for new connections zero or less than zero.

I also find that the link of the new connections forecast to the load forecast in general is not clear, in terms of the functions of these two forecasts.

Q What do you recommend?

A The Commission should order the Company to set the growth rate in new connections to zero. As described above, I recommend that the Company's test year capital expenditures for New Business for the 12 months ending 10/31/2026

be reduced to $37,025,000 to only cover 50 percent of new connection costs. Backing out 3 percent growth from this revised figure, I calculate that the revised New Business capital expenditures, accounting for both a 50/50 cost share on new connection costs and for an assumption of flat new connections growth, should be $35,946,602.[66]

In addition, the Commission should require the Company to explain and document the relationship of the new connections forecast to the load forecast.

Q Does this complete your direct testimony?

A Yes, it does.

[66] $37,025,000/1.03=$35,946,602.

Alice Napoleon, Principal Associate

Synapse Energy Economics I 485 Massachusetts Avenue, Suite 3 I Cambridge, MA 02139 I 617-453-7041
anapoleon@synapse-energy.com

PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Inc., Cambridge, MA. *Principal Associate*, June 2021 – Present; *Senior Associate*, June 2013 – June 2021; *Associate*, July 2008 – June 2013; *Research Associate*, April 2005 – July 2008.

- Provides expert analysis, stakeholder support, research, expert witness services, and consulting services regarding energy efficiency program design and performance, funding and incentive mechanisms, cost-effectiveness screening, potential studies, and strategic planning.
- Develops and sponsors testimony on electric and natural gas energy efficiency plans, energy transition planning and policy, innovative programs, regulatory structures, and advanced metering infrastructure (AMI) proposals in states and provinces across the U.S. and Canada.
- Conducts distributional equity analysis and develops reports on disparate impacts of electric and natural gas infrastructure on economic, social, and health outcomes, as well as options for improving energy equity. Analyzes factors that affect participation in, and the effectiveness of, energy efficiency programs to inform program design and targeting efforts.
- Oversees and conducts interviews and research, including literature reviews and case studies.

Resource Insight, Inc., Arlington, MA. *Research Assistant*, 2003-2005.

Responsible for conducting research and analysis of electric, gas, steam, and water resource issues. Conducted discounted cash flow analysis for asset valuation. Developed market-price benchmarks for analysis of power-supply bids including energy, capacity, ancillary services, transmission, ISO services, losses, and adjustment for load shape. Prepared discovery responses, formal objections, comments, and testimony; collaboratively wrote and edited reports; created and formatted exhibits. Participated in drafting an Energy Plan for New York City. Edited solicitation for competitive power supply to serve aggregated municipal load.

University of Massachusetts, Amherst, MA. *Teaching Assistant*, 2001-2002.

Developed and taught lessons on applied math to a diverse group of incoming graduates; tutored students in microeconomic theory and cost benefit analysis; graded problem sets and memoranda.

International Council for Local Environmental Initiatives, Berkeley, CA. *Cities for Climate Protection Intern for the City of Northampton, MA*, 2001.

Compiled primary and secondary source data on energy consumption and solid waste generation by the municipal government, city residents, and businesses; applied emissions coefficients to calculate total GHG emissions; identified current and planned municipal policies that impact GHG emissions;

researched the predicted local effects of global warming; gathered public feedback to provide acceptable and proactive policy alternatives. Composed a GHG emissions inventory describing research findings; wrote and distributed a policy report and press releases; gave newspaper and radio interviews; addressed public officials and the public during a televised meeting.

University of Massachusetts, Amherst, MA. *Research Assistant*, 2000-2001.

Located federal data sources, identified changes, and updated a research database to evaluate the Habitat Conservation Program; proofread articles and white papers; composed a literature review on land use modelling. Collaboratively administered, tested, and proposed interface enhancements for a web-based data warehouse of regional habitat change research; formally presented the system to an independent research group.

Court Square Data Group, Inc., Springfield, MA. *Administration Manager*, 1998-2000; *Project Administrator*, 1996-1998.

As Administration Manager, analysed profitability and diversity of income sources; managed cash flow, expense, and income data; created budgets; devised and implemented procedures to increase administrative efficiency; implemented new accounting system with minimal disruption to workflow.

As Project Administrator, coordinated implementation of software features; identified opportunities for future development; monitored problem resolution; wrote and coordinated production of a user's manual and questionnaires; edited technical proposals and a business plan.

EDUCATION

University of Massachusetts, Amherst, MA
Master of Public Administration, 2002

Rutgers University, New Brunswick, NJ
Bachelor of Arts in Economics, 1995

Syracuse University, Syracuse, NY, 1994

PUBLICATIONS

Napoleon, A., S. Schadler. 2025. *New York Gas Utilities Digging Consumers Into a Deeper Hole Factsheet.* Synapse Energy Economics for Natural Resources Defense Council.

Napoleon, A., S. Koester, S. Schadler, C. Mattioda. 2024. *Natural Resources Defense Council Comments on Staff Straw Proposal to Modify 16 NYCRR Part 230.* Synapse Energy Economics for Natural Resources Defense Council.

Napoleon, A., T. Nguyen, S. Schadler, S. deLeon, K. Takahashi. 2024. *Comments of Environmental Defense Fund, Natural Resources Defense Council, Sierra Club, Earthjustice, and Alliance for a Green*

Economy on Non-Pipes Alternative Framework Questions. Synapse Energy Economics for Natural Resources Defense Council.

Kallay, J., A. Napoleon, E. Ashley, K. Takahashi, T. Woolf. 2024. *Review of New Brunswick Power's 2024/25 to 2026/27 DSM Program Initiatives Update.* Synapse Energy Economics for the New Brunswick Energy and Utilities Board Staff.

Woolf, T., A. Napoleon, D. Goldberg, E. Carlson, C. Mattioda. 2023. *Distributed Equity Analysis for Energy Efficiency and Other Distributed Energy Resources.* Synapse Energy Economics for Lawrence Berkley National Lab and E4TheFuture.

Hopkins, A. S., A. Napoleon, K. Schultz. 2023. *The High Cost of New York Gas Utilities' Leak- Prone Pipe Replacement Programs.* Synapse Energy Economics for Natural Resources Defense Council.

Hopkins, A. S., S. Kwok, A. Napoleon, K. Schultz, K. Takahashi. Presentation: "Massachusetts Clean Heat Standard: Policy and Regulatory Analysis" presented with Conservation Law Foundation, February 2023.

Hopkins, A. S., A. Napoleon, J. Litynski, K. Takahashi, J. Frost, S. Kwok. 2022. *Climate Policy for Maryland's Gas Utilities: Financial Implications*. Synapse Energy Economics for Maryland Office of the People's Counsel.

Hopkins, A. S., S. Kwok, J. Litynski, A. Napoleon, K. Takahashi. 2022. Memo: Evaluation of Draft Consultant Reports in Massachusetts DPU Docket 20-80. Synapse Energy Economics for Conservation Law Foundation.

Frost, J. S. Kwok, K. Takahashi, A.S. Hopkins, A. Napoleon. 2021. *New York Heat Pump Trajectory Analysis*. Synapse Energy Economics for NRDC.

Hopkins, A. S., A. Napoleon, K. Takahashi. 2021. *A Framework for Long-Term Gas Utility Planning in Colorado*. Synapse Energy Economics for the Colorado Energy Office.

Kallay, J., A. Napoleon, K. Takahashi, E. Sinclair, T. Woolf. 2021. *Opportunities for Evergy Kansas to Address Energy Equity Within its Integrated Resource Plan and Other Planning Processes*. Synapse Energy Economics for Union of Concerned Scientists.

Takahashi, K., E. Sinclair, A. Napoleon, A. Hopkins, D. Goldberg. 2021. *Evaluation of EnergyWise Low-Income Energy Efficiency Program in Mississippi – Program Performance, Design, and Implications for Low-Income Efficiency Programs*. Synapse Energy Economics for Sierra Club and Gulf Coast Community Foundation.

Kallay, J., A. Napoleon, J. Hall, B. Havumaki, A. Hopkins, M. Whited, T. Woolf, J. Stevenson, R. Broderick, R. Jeffers, B. Garcia. 2021. *Regulatory Mechanisms to Enable Investments in Electric Utility Resilience.* Synapse Energy Economics for Sandia National Laboratories.

Kallay, J., A. Napoleon, B. Havumaki, J. Hall, C. Odom, A. Hopkins, M. Whited, T. Woolf, M. Chang, R. Broderick, R. Jeffers, B. Garcia. 2021. *Performance Metrics to Evaluate Utility Resilience Investments.* Synapse Energy Economics for Sandia National Laboratories.

Hopkins, A., S. Kwok, A. Napoleon, C. Roberto, K. Takahashi. 2021. *Scoping a Future of Gas Study*. Synapse Energy Economics for Conservation Law Foundation.

Kallay, J., A. Hopkins, A. Napoleon, B. Havumaki, J. Hall, M. Whited, M. Chang., R. Broderick, R. Jeffers, K. Jones, M. DeMenno. 2021. *The Resilience Planning Landscape for Communities and Electric Utilities.* Synapse Energy Economics for Sandia National Laboratories.

Napoleon, A., E. Camp, S. Letendre, E. Sinclair. 2021. *Synapse Comments on the Pennsylvania Public Utility Commission on the Utilization of Storage Resources as Electric Distribution Assets - Docket No. M-2020-3022877*. Synapse Energy for the National Resources Defense Council.

Hopkins, A. S., A. Napoleon, K. Takahashi. 2020. *Gas Regulation for a Decarbonized New York: Recommendations for Updating New York Gas Utility Regulation.* Synapse Energy Economics for Natural Resources Defense Council.

Takahashi, K., A. Napoleon. 2020. *Synapse Comments on EfficiencyOne Performance Alignment Study - M09096.* Questions and comments regarding the EfficiencyOne Performance Alignment Study filed on April 21, 2020. Synapse Energy Economics for the Nova Scotia Utility and Review Board.

Napoleon, A., J. Hall, J. Kallay, M. Chang, P. Eash-Gates, N. L. Seidman, C. James, D. Torre, D. Brutkoski, J. Migden-Ostrander, K. Colburn, K. Maddux, D. Harlow, M. Power. 2020. *Energy Infrastructure: Sources of Inequities and Policy Solutions for Improving Community Health and Wellbeing*. Synapse Energy Economics, Regulatory Assistance Project, and Community Action Partnership for the Robert Wood Johnson Foundation.

Napoleon, A., J. Kallay, K. Takahashi. 2020. *Utility Energy Efficiency and Building Electrification Portfolios Through 2025: A Brief on the New York Public Service Commission's Recent Order.* Synapse Energy Economics for the Natural Resources Defense Council.

Takahashi, K., A. Napoleon. 2019. *Synapse Comments on EfficiencyOne's 2019 Rate and Bill Impact Analysis and Model - M09471.* Comments regarding the revised 2019 Rate and Bill Impact Analysis filed by EfficiencyOne on November 1, 2019. Synapse Energy Economics for the Nova Scotia Utility and Review Board.

Napoleon, A., B. Havumaki, D. Bhandari, T. Woolf. 2019. *Review of New Brunswick Power's Application for Approval of an Advanced Metering Infrastructure Capital Project: In the Matter of the New Brunswick Power Corporation and Section 107 of the Electricity Act; Matter No. 452.* Synapse Energy Economics for the New Brunswick Energy and Utilities Board Staff.

Kallay, J., A. Hopkins, J. Frost, A. Napoleon, K. Takahashi, J. Slason, G. Freeman, D. Grover, B. Swanson. 2019. *Net Zero Energy Roadmap for the City of Burlington, Vermont*. Synapse Energy Economics and Resource Systems Group for Burlington Electric Department.

Napoleon, A., T. Woolf, K. Takahashi, J. Kallay, B. Havumaki. 2019*. Comments in the New York Public Service Commission Case 18-M-0084: In the Matter of a Comprehensive Energy Efficiency Initiative.* Comments related to NY Utilities report regarding energy efficiency budgets and targets, collaboration,

heat pump technology, and low- and moderate-income customers and requests for approval. Prepared by Synapse Energy Economics on behalf of Natural Resources Defense Council.

Allison, A., A. Napoleon, J. Kallay. 2019. *Maine Low-Income Home Energy Burden Study.* Synapse Energy Economics for the Maine Office of the Public Advocate.

Napoleon, A., D. Goldberg, K. Takahashi, T. Woolf. 2019. *An Assessment of Prince Edward Island Energy Corporations' 2018 - 2021 Energy Efficiency and Conservation Plan.* Synapse Energy Economics for Carr, Stevenson and MacKay as Counsel to the Island Regulatory and Appeals Commission.

Takahashi, K., A. Napoleon. 2018. *Synapse Comments on EfficiencyOne's 2019 Rate and Bill Impact Analysis and Model - M09471.* Comments regarding the revised 2019 Rate and Bill Impact Analysis filed by EfficiencyOne on November 1, 2019. Synapse Energy Economics for the Nova Scotia Utility and Review Board.

Camp, E., B. Fagan, J. Frost, D. Glick, A. Hopkins, A. Napoleon, N. Peluso, K. Takahashi, D. White, R. Wilson, T. Woolf. 2018. *Phase 1 Findings on Muskrat Falls Project Rate Mitigation.* Synapse Energy Economics for Board of Commissioners of Public Utilities, Province of Newfoundland and Labrador.

Hall, J., J. Kallay, A. Napoleon, K. Takahashi, M. Whited. 2018. *Locational and Temporal Values of Energy Efficiency and other DERs to Transmission and Distribution Systems.* Synapse Energy Economics.

Ackerman, F., S. Fields, A. Napoleon, D. Bhandari. 2018. *Can Clean Energy Replace California Oil Production: Petroleum cutbacks and the California economy.* Synapse Energy Economics for the 11th Hour Project.

White, D., K. Takahashi, A. Napoleon, T. Woolf. 2018. *Value of Energy Efficiency in New York: Assessment of the Range of Benefits of Energy Efficiency Programs*. Synapse Energy Economics for Natural Resources Defense Council.

Woolf, T., A. Hopkins, M. Whited, K. Takahashi, A. Napoleon. 2018. *Review of New Brunswick Power's 2018/2019 Rate Case Application.* In the Matter of the New Brunswick Power Corporation and Section 103(1) of the Electricity Act Matter No. 375. Prepared by Synapse Energy Economics for the New Brunswick Energy and Utilities Board Staff.

Fagan, B., A. Napoleon, S. Fields, P. Luckow. 2017. *Clean Energy for New York: Replacement Energy and Capacity Resources for the Indian Point Energy Center Under New York Clean Energy Standard (CES).* Synapse Energy Economics for Riverkeeper and Natural Resources Defense Council.

Kallay, J., A. Napoleon, M. Chang. 2016. *Opportunities to Ramp Up Low-Income Energy Efficiency to Meet States and National Climate Policy Goals*. Synapse Energy Economics.

Woolf, T., A. Napoleon, P. Luckow, W. Ong, K. Takahashi. 2016. *Aiming Higher: Realizing the Full Potential of Cost-Effective Energy Efficiency in New York.* Synapse Energy Economics for Natural Resources Defense Council, E4TheFuture, CLEAResult, Lime Energy, Association for Energy Affordability, and Alliance for Clean Energy New York.

Napoleon, A., K. Takahashi, J. Kallay, T. Woolf. 2016. "Evaluation, Measurement, and Verification in Virginia." Memorandum prepared by Synapse Energy Economics for Clean Energy Solutions Inc., Virginia Energy Efficiency Council, and Virginia Department of Mines, Minerals and Energy.

Woolf, T., A. Napoleon, M. Whited. 2015-2016. *Comments and Reply Comments in the New York Public Service Commission Case 14-M-0101: Reforming the Energy Vision*. Comments related to Staff's (a) a benefit-costs analysis framework white paper, (b) ratemaking and utility business models white paper, and (c) Distributed System Implementation Plan guide. Prepared by Synapse Energy Economics on behalf of Natural Resources Defense Council and Pace Energy and Climate Center.

Kallay, J., K. Takahashi, A. Napoleon, T. Woolf. 2015. *Fair, Abundant, and Low-Cost: A Handbook for Using Energy Efficiency in Clean Power Plan Compliance.* Synapse Energy Economics for the Energy Foundation.

Woolf, T., K. Takahashi, E. Malone, A. Napoleon, J. Kallay. 2015. *Ontario Gas Demand-Side Management 2016-2020 Plan Review.* Synapse Energy Economics for the Ontario Energy Board.

Biewald, B., J. Daniel, J. Fisher, P. Luckow, A. Napoleon, N. R. Santen, K. Takahashi. 2015. *Air Emissions Displacement by Energy Efficiency and Renewable Energy.* Synapse Energy Economics.

Takahashi, K., A. Napoleon. 2015. "Pursue Behavioral Efficiency Programs." Ed. John Shenot. In *Implementing EPA's Clean Power Plan: A Menu of Options.* National Associate of Clean Air Agencies.

Daniel, J. A. Napoleon, T. Comings, S. Fields. 2015. *Comments on Entergy Louisiana's 2015 Integrated Resource Plan*. Synapse Energy Economics for Sierra Club.

Whited, M., T. Woolf, A. Napoleon. 2015. *Utility Performance Incentive Mechanisms: A Handbook for Regulators*. Synapse Energy Economics for the Western Interstate Energy Board.

Takahashi, K., T. Comings, A. Napoleon. 2014. *Maximizing Public Benefit through Energy Efficiency Investments.* Synapse Energy Economics for Sierra Club.

Keith, G., S. Jackson, A. Napoleon, T. Comings, J. Ramey. 2012. *The Hidden Costs of Electricity: Comparing the Hidden Costs of Power Generation Fuels.* Synapse Energy Economics for Civil Society Institute.

Keith, G., B. Biewald, K. Takahashi, A. Napoleon, N. Hughes, L. Mancinelli, E. Brandt. 2010. *Beyond Business as Usual: Investigating a Future without Coal and Nuclear Power in the US.* Synapse Energy Economics for Civil Society Institute.

Napoleon, A., W. Steinhurst, M. Chang, K. Takahashi, R. Fagan. 2010. *Assessing the Multiple Benefits of Clean Energy: A Resource for States*. US Environmental Protection Agency with research and editorial support from Stratus Consulting, Synapse Energy Economics, Summit Blue, Energy and Environmental Economics, Inc., Demand Research LLC, Abt Associates, Inc., and ICF International.

Napoleon, A., D. Schlissel. 2009. *Economic Impacts of Restricting Mountaintop/Valley Fill Coal Mining in Central Appalachia*. Synapse Energy Economics for Sierra Club, and Appalachian Center for the Economy and the Environment.

Napoleon, A., J. Fisher, W. Steinhurst, M. Wilson, F. Ackerman, M. Resnikoff. 2008. *The Real Costs of Cleaning Up Nuclear Waste: A Full Cost Accounting of Cleanup Options for the West Valley Nuclear Waste Site*. Synapse Energy Economics for Citizens' Environmental Coalition.

Napoleon, A., G. Keith, C. Komanoff , D. Gutman, P. Silva, D. Schlissel, A. Sommer, C. Chen, A. Roschelle, J. Levy, P. Kinney. 2007. *Quantifying and Controlling Fine Particulate Matter in New York City*. Synapse Energy Economics for Coalition Helping Organize a Kleaner Environment, Natural Resources Defense Council (NRDC), Reliant Energy.

Drunsic, M., A. Napoleon, E. Hausman, R. Hornby. 2007. *Arkansas Electric Generation Fuel Diversity: Implementation of EPAct 2005 Amendments to PURPA Section 111 (d)*. Synapse Energy Economics for Arkansas Public Service Commission Staff.

Hausman, E., R. Fagan, D. White, K. Takahashi, A. Napoleon. 2007. *LMP Electricity Markets: Market Operations, Market Power, and Value for Consumers*. Synapse Energy Economics for American Public Power Association.

Synapse Energy Economics. 2006. *Portfolio Management: Tools and Practices for Regulators*. Prepared for National Association of Regulatory Utility Commissioners.

Steinhurst, W., A. Napoleon, K. Takahashi. 2006. *Energy in the Northern Forest Region: A Situation Analysis*. Synapse Energy Economics for Northern Forest Center and The North Country Council.

Synapse Energy Economics. 2006. *Ensuring Delaware's Energy Future: A Response to Executive Order Number 82*. Synapse Energy Economics for Delaware Public Service Commission Staff by the Delaware Cabinet Committee on Energy and others.

Fagan, R., A. Napoleon, A. Rochelle, A. Sommer, W. Steinhurst, D. White. K. Takahashi. 2006. *Mohave Alternatives and Complements Study: Assessment of Carbon Sequestration Feasibility and Markets.* Sargent & Lundy and Synapse Energy Economics, Inc. for Southern California Edison.

TESTIMONY

Michigan Public Service Commission (Case No. U-21291): Direct Testimony of Alice Napoleon in the matter of the Application of DTE Gas Company for authority to increase its rates, amend its rate schedules, and rules governing the distribution and supply of natural gas, and for miscellaneous accounting authority. Synapse Energy Economics for Michigan Environmental Council, Natural Resources Defense Council, and Sierra Club. May 7, 2024.

New York Public Service Commission (Case 23-G-0627): Direct Testimony of Alice Napoleon in the Matter of the Rates, Charges, Rules and Regulations of National Fuel Gas Distribution Corporation. On behalf of Natural Resources Defense Council. March 1, 2024.

New York Public Service Commission (Case 23-G-0225 and Case 23-G-0226): Direct Testimony of Alice Napoleon regarding proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of KeySpan Gas East Corporation d/b/a National Grid for Gas Service and The Brooklyn Union Gas Company d/b/a National Grid NY for Gas Service. On behalf of Natural Resources Defense Council. September 1, 2023.

Nova Scotia Utility and Review Board (NSUARB M11003): Evidence of Alice Napoleon in the Matter of The Public Utilities Act, R.S.N.S 1989, c.380, as amended, and the application of Nova Scotia Power Inc. for Authorization to Overspend on Capital Work Order CI47124- Advanced Metering Infrastructure. On behalf of Counsel to Nova Scotia Utility and Review Board. June 22, 2023.

New York Public Utilities Commission (Case No. 22-E-0064 and 22-G-0065): Direct and Rebuttal Testimony of Alice Napoleon and Asa Hopkins regarding Con Edison's proposed gas-side investments as greenhouse gas mitigation strategies and gas extension allowance rule changes and the need for long-term planning for the gas system and adequacy of the company's non-pipe alternatives framework. On behalf of Natural Resources Defense Council, May 2022.

Nova Scotia Utility and Review Board (M10473): Evidence of Alice Napoleon and Kenji Takahashi regarding EfficiencyOne's 2023-2025 DSM Resource Plan, with a focus on the Settlement Plan. On behalf of Counsel to Nova Scotia Utility and Review Board, May 2022.

Pennsylvania Public Utility Commission (Docket No. M-2020-3020824): Revised Direct Testimony of Alice Napoleon and Kenji Takahashi regarding PPL Electric Utilities' proposed Act 129 Phase IV Energy Efficiency and Conservation. On behalf of the Natural Resources Defense Council. January 19, 2021.

Pennsylvania Public Utility Commission (Docket No. M-2020-3020830): Direct testimony of Alice Napoleon and Courtney Lane regarding PECO Energy Company's proposed Act 129 Phase IV Energy Efficiency and Conservation Plan. On behalf of the natural Resources Defense Council. January 14, 2021.

Nova Scotia Utility and Review Board (Matter No. M09519): Evidence of Alice Napoleon regarding Nova Scotia Power's Smart Grid Nova Scotia Project proposal. On behalf of Counsel to the Nova Scotia Utility and Review Board. February 19, 2020.

New York Public Service Commission (Cases 20-E-0380 and 20-G-0381): Direct testimony of Alice Napoleon and Kenji Takahashi regarding proposed earnings adjustment mechanisms in a proceeding on Rates, Charges, Rules, and Regulations related to Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service and National Grid for Gas Service. On behalf of the Natural Resources Defense Council. November 25, 2020.

California Public Utilities Commission (Application Nos. 19-11-003, 19-11-004, 19-11-005, 19-11-006): Prepared Testimony of Alice Napoleon addressing proposals of Pacific Gas and Electric Company, San

Diego Gas & Electric Company, Southern California Edison Company, and Southern California Gas Company related to the Energy Savings Assistance (ESA) Program and Budgets for Program Years 2021-2026. On behalf of The Utility Reform Network. September 4, 2020.

California Public Utilities Commission (Application Nos. 19-11-003, 19-11-004, 19-11-005, 19-11-006, 19-11-007): Comments of The Utility Reform Network on the Energy Division Staff Proposal and Utility Applications. On behalf of The Utility Reform Network. July 24, 2020.

Nova Scotia Utility and Review Board (Matter No. M09096): Evidence of Alice Napoleon regarding EfficiencyOne's 2020-2022 DSM Plan. On behalf of Counsel to the Nova Scotia Utility and Review Board. May 28, 2019.

New York Public Service Commission (Cases 19-E-0065 and 19-G-0066): Direct testimony of Tim Woolf and Alice Napoleon regarding energy efficiency targets and incentives in Con Edison rate case. On behalf of the Natural Resources Defense Council. May 24, 2019.

Nova Scotia Utility and Review Board (Matter No. M08604): Evidence of Alice Napoleon regarding the 2019 Demand Side Management Resource Plan. On behalf of Counsel to the Nova Scotia Utility and Review Board. June 13, 2018.

Nova Scotia Utility and Review Board (Matter No. M08349): Evidence of Alice Napoleon regarding Nova Scotia Power's Advanced Meter Infrastructure Proposal. On behalf of Counsel to the Nova Scotia Utility and Review Board. January 18, 2018.

Nova Scotia Utility and Review Board (Case No. M07767): Direct evidence in the matter of the Nova Scotia Power Advanced Meter Infrastructure Pilot. On behalf of Counsel to the Nova Scotia Utility and Review Board. February 16, 2017.

Public Service Commission of South Carolina (Docket No. 2016-223-E): Direct Testimony of Alice Napoleon regarding South Carolina Electric and Gas Energy Efficiency Efforts. On behalf of South Carolina Coastal Conservation League. September 1, 2016.

Nova Scotia Utility and Review Board (Case No. M06247): Direct evidence in the matter of an application by Efficiency Nova Scotia Corporation for approval of its electricity demand-side management plan for 2015. On behalf of Counsel to the Nova Scotia Utility and Review Board. July 14, 2014.

TESTIMONY ASSISTANCE

Public Service Commission of South Carolina (Docket No. 2017-2-E): Direct Testimony of Thomas Vitolo, PhD regarding Avoided Cost Calculations and the Costs and Benefits of Solar Net Energy Metering for South Carolina Electric & Gas Company. On behalf of South Carolina Coastal Conservation League and Southern Alliance for Clean Energy. March 22, 2017.

State of New Jersey Board of Public Utilities (Docket No. ER16060524): Direct testimony of Tim Woolf regarding the Petition of Rockland Electric Company for Approval of an Advanced Metering Program, and for Other Relief. On behalf of New Jersey Division of the Ratepayer Advocate. September 9, 2016.

Nova Scotia Utility and Review Board (Matter No. M06733): Direct testimony of Tim Woolf regarding EfficiencyOne's 2016-2018 demand-side management plan. On behalf of the Nova Scotia Utility and Review Board. June 2, 2015.

Missouri Public Service Commission (File No. EO-2015-0055): Rebuttal and surrebuttal of Tim Woof on the topic of Ameren Missouri's 2016-2018 Energy Efficiency Plan. On behalf of Sierra Club. March 20, 2015 and April 27, 2015.

State of New Jersey Board of Public Utilities (Docket No. EO14080897): Direct testimony of Kenji Takahashi regarding the Petition of Public Service Electric & Gas Company to continue its Energy Efficiency Economic Extension Program on a Regulated Basis (EEE Extension II). On behalf of New Jersey Division of the Ratepayer Advocate. November 7, 2014.

Kentucky Public Service Commission (Case No. 2014-00003): Direct testimony of Tim Woof regarding Louisville Gas and Electric Company and Kentucky Utilities Company's proposed 2015-2018 demand-side management and energy efficiency program plan. On behalf of Wallace McMullen and the Sierra Club. April 14, 2014.

State of New Jersey Board of Public Utilities (Docket No. GO12050363): Direct testimony of Maximilian Chang regarding South Jersey Gas Company's proposal to extend and modify its energy-efficiency programs. On behalf of New Jersey Division of the Ratepayer Advocate. November 9, 2012.

State of New Jersey Board of Public Utilities (Docket No. GO12070640): Direct testimony of Robert Fagan regarding New Jersey Natural Gas Company's petition for approval of the extension of the SAVEGREEN energy efficiency programs. On behalf of the New Jersey Division of the Ratepayer Advocate. October 26, 2012.

State of New Jersey Board of Public Utilities (Docket No. GO11070399): Direct testimony of Robert Fagan regarding Elizabethtown Gas Company's Proposed Energy Efficiency Program. On behalf of New Jersey Division of the Ratepayer Advocate. December 16, 2011.

State of New Jersey Board of Public Utilities (Docket No. GR11070425): Direct testimony of Robert Fagan regarding New Jersey Natural Gas Company's petition for approval of the extension of the SAVEGREEN energy efficiency programs. On behalf of the New Jersey Division of the Ratepayer Advocate. November 16, 2011.

State of New Jersey Board of Public Utilities (Docket No. GR10030225): Direct testimony of David Nichols regarding New Jersey Natural Gas Company's Proposed Energy Efficiency Program. On behalf of New Jersey Division of the Ratepayer Advocate. July 9, 2010.

Virginia State Corporation Commission (Case No. PUE-2009-00097): Direct testimony of William Steinhurst regarding Appalachian Power Company's Integrated Resource Plan filing pursuant to Va. Code

§ 56-597 et seq. On behalf of the Southern Environmental Law Center, Chesapeake Climate Action Network, Appalachian Voices, and the Virginia Chapter of The Sierra Club. March 23, 2010.

Delaware Public Service Commission (Docket No. 07-20): Jointly authored an expert report, with Robert Fagan, William Steinhurst, David White, and Kenji Takahashi, In the Matter of Integrated Resource Planning for the Provision of Standard Offer Service by Delmarva Power & Light Company Under 26 DEL. C. §1007 (c) & (d). On behalf of the Staff of Delaware Public Service Commission. April 2, 2009.

State of New Jersey Board of Public Utilities (BPU Docket EM05020106): Direct and surrebuttal testimony of Bruce Biewald, Robert Fagan, and David Schlissel regarding the Joint Petition Of Public Service Electric and Gas Company And Exelon Corporation For Approval of a Change in Control Of Public Service Electric and Gas Company And Related Authorizations. On behalf of New Jersey Division of the Ratepayer Advocate. November 14, 2005 and December 27, 2005.

Illinois Commerce Commission (Dockets 05-0160, 05-0161, 05-0162): Direct testimony of William Steinhurst regarding Ameren's proposed competitive procurement auction (CPA). On behalf of Illinois Citizens Utility Board. June 15, 2005 and August 10, 2005.

Illinois Commerce Commission (Docket 05-0159): Direct testimony of William Steinhurst regarding Commonwealth Edison's Proposal to implement a competitive procurement process. On behalf of Illinois Citizens Utility Board and Cook County State's Attorney's Office. June 8, 2005 and August 3, 2005.

Resume updated April 2025

Question:

4. Refer to the Net Zero Plan provided in MNSC-CE-0013_Dreisig_Att_2. For each decarbonization measure outlined in the Net Zero Plan including EWR, Electrification – Network Geothermal, Electrification – Air-Source Heat Pumps, Electrification – Hybrid Heating, Hydrogen Replacement, Landfill RNG, Dairy RNG, Foodwaste RNG, Carbon Offsets, Carbon Capture/transport, Synthetic Natural Gas, and Other Clean Fuel Technologies:

a. Please clarify how the Company has incorporated each measure into its proposed capital plan.

Response:

Only renewable natural gas (RNG) is included in the Company's proposed capital plan as this technology has an approved regulatory tariff. Cost recovery for the RNG capital plan is not requested through base rates rather through an approved voluntary tariff as part of the MI Clean Air Program.

Proposed EWR expenditures are approved in EWR Plan filings governed by the Michigan Public Service Commission (MPSC) under the framework established by State law, Public Act 229 of 2023, the Clean and Renewable Energy and Energy Waste Reduction Act.

Other pathways including Network Geothermal, Electrification – Air-Source Heat Pumps, Electrification – Hybrid Heating, Hydrogen Replacement, Carbon Capture/transport, Synthetic Natural Gas, and Other Clean Fuel Technologies are included in the Company's proposed decarbonization plan but not the proposed capital plan.

Witness: NEAL P. DREISIG
Date: March 26, 2025

Question:

34. Refer to page 82 of the NGDP where it states, "Consumers Energy is assessing where hybrid heating and heat pump technology can best serve customers."
a. Please provide details about any assessment the Company has conducted to-date.
b. Please provide all analysis, resources, and references behind this statement, including any supporting data and workpapers with formulas intact and all sources, assumptions, and units clearly identified.
c. Please describe the Company's plans for deploying or supporting residential and commercial hybrid heating through 2030 and through 2050.
d. Is the Company analyzing any full electrification technologies (heat pump technology without natural gas back-up)?
i. If so, please provide this analysis. In answering this question, please also provide data on:
1. The switchover temperature at or below which a hybrid heating system (combining a heat pump with a backup gas heating system) would rely on the backup gas heating.
2. The associated efficiency value, expressed as the coefficient of performance (COP), for the hybrid heat pump at that switchover temperature.
e. If the Company is not analyzing full electrification technologies, please explain how the Company can assess the benefits of hybrid heating and heat pump technologies relative to full electrification technologies.

Response:

a. The Company has not yet assessed where hybrid heating and heat pump technology can best serve customers but has evaluated the impact of heat pump technology with Michigan residents served by non-regulated fuels. Please reference U21806-MNSC-CE-0039_Dreisig_ATT_1 for completed impact evaluation on heat pump pilot study.
b. Attachments U21806-MNSC-CE-0039_Dreisig_ATT_1, U21806-MNSC-CE-0039_Dreisig_ATT_2, U21806-MNSC-CE-0039_Dreisig_ATT_3 and Appendix C – Decarbonization Modeling of the Natural Gas Delivery Plan are the analyses performed to date on heat pump technology.
c. The Company does not have current plans to deploy or support hybrid heating through 2030 and 2050. Customer research will continuously monitor behavior and preferences to assess the future need to support hybrid heating and heat pump technology.
d. The Company is currently evaluating geothermal technology through thermal energy networks in local communities. Please reference attachment U21806-MNSC-CE-0039_Dreisig_ATT_4 showing the Company's network geothermal proposal to the MPSC.
    i. The Company has not determined the optimum switchover temperature yet for network geothermal technology.
    ii. A coefficient of performance (COP) value is not evaluated at this switchover temperature; however, industry research suggests that network geothermal technology provides the highest COP of any electrification technology. Attachment U21806-MNSC-CE-0039_Dreisig_ATT_5 compares network geothermal against other heat pump pathways clearly showing the highest COP amongst alternatives. This is important because it may provide the most mitigation to incremental peak electric load during winter months in a highly electrified future.

e. As noted, the Company's gas business at this time is investigating full electrification through network geothermal technology.

Witness: NEAL P. DREISIG
Date: February 3, 2025

Question:

9. On page 79 of the NGDP Consumers states that it "will actively investigate all clean fuel pathways to meet the needs of customers and assess which technologies best support the energy transition."

a. By "clean fuel pathways" is the Company referring to the Scope 3 emission reduction strategies discussed in MNSC-CE-0038_ Dreisig _CONF_Att_1? If not, what are the 'clean fuel pathways' the Company is investigating? Please describe all of the specific measures, activities, and energy sources the Company is considering in its investigation.

b. Please describe in detail how the Company is investigating 'all clean fuel pathways' to best support the energy transition.

i. Is the Company tracking or measuring, or planning to track or measure, any metrics to support its investigation of clean fuel pathways? Please list and describe the metrics the Company is using or plans to use to investigate clean fuel pathways.

ii. For each metric, please indicate how the Company will report metric results and findings from its investigation.

iii. How will the Company evaluate each pathway and identify which pathway to proceed with?

iv. Please describe the status of the Company's investigation of clean fuel pathways. If there are plans to conduct additional analysis, please describe.

Response:

a. Yes. the Company is referring to the Scope 3 emission reduction strategies discussed in MNSC-CE-0038_ Dreisig _CONF_Att_1. The Company is investigating all measures and energy sources disclosed on U21806-MNSC-CE-0013_ATT_2.
b. The Company assesses the external environment through three primary mechanisms: peer utilities, current events and customer interactions.

   The Company routinely collaborates with peer gas utilities to validate which clean fuel technologies make the most sense for end use heat applications, any learnings discovered and best practices. For example, the Company collaborates with multiple utilities in the development of network geothermal technology to share learnings, benefits and best practices to its potential implementation.

   The Company assesses current events surrounding technology breakthroughs, costs of technologies and barriers to implementation to help provide context for Michigan specific applications.

   The Company routinely collaborates with customers to understand how they are thinking about clean fuel technologies and how the Company as their energy provider can support them in achieving their own goals. For example, customers who have existing processes that use hydrogen often consider how to decarbonize hydrogen production through a conversion to green hydrogen. Alternatively, customers often express interest in technologies that require the least amount of

infrastructure conversion which leads to interest in renewable natural gas and synthetic fuels. The Company uses these opportunities to investigate various pathways alongside customers to help meet their needs.

i. Clean fuel technologies are best assessed using a marginal cost abatement curve. This is the best analysis to initially assess the cost effectiveness of alternative energy sources for natural gas. Analysis for the marginal abatement cost curve is reported in dollars per ton of carbon abated ($/ton). $/ton is the most appropriate measure for all clean fuel alternative technologies because it creates a level assessment focused on carbon reduction.

ii. As discussed in U21806-MNSC-CE-0571, the marginal cost of abatement curve is updated annually. This assessment is used as an input to the Natural Gas Delivery Plan.

iii. Subpart b. describes how the Company evaluates and chooses to proceed with various technologies for further investigation.

iv. Status of investigation across all technologies is ongoing and iterative. As described, the Company uses customer input and industry intelligence to direct how the Company pursues each pathway. Current investigation for each primary pathway is included below:

Renewable Natural Gas: continually assessing technology cost, industry growth and customer interest.
Synthetic fuels: the Company will study e-fuel pathways in 2025 to understand the cost of production and potential customer interest.
Electrification: The Company is undergoing a planning project to study the benefits of network geothermal technology in 2025.
Carbon Capture: Carbon capture is a nascent technology, not widely demonstrated. The Company continues to watch the maturity of carbon capture maturity and collaborate with peer utilities on how it can help achieve net zero ambitions.
Carbon offsets: Carbon offsets sourced through forestry preservation projects is widely understood with no further investigation occurring.

Witness: NEAL P. DREISIG
Date: March 27, 2025

U21806-MNSC-CE-0599_Warriner_ATT_1

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Main:												
Regular												
	2" Non Joint	$13.82	$15.20	$16.72	$16.87	$15.41	$14.40	$17.13	$17.13	$23.36	$24.76	$24.40
	4" Non Joint	$22.28	$24.50	$26.95	$55.78	$48.23	$49.68	$54.01	$54.01	$79.90	$94.89	$94.89
	6" Non Joint	$36.61	$40.28	$44.31	$54.47	$59.28	$70.99	$61.58	$61.58	$110.22	$110.22	$110.22
Joint												
	2" Joint	$10.66	$11.73	$11.26	$11.28	$16.30	$18.83	$22.49	$22.49	$29.46	$29.77	$33.65
	4" Joint	$18.27	$20.10	$35.87	$26.45	$39.89	$52.03	$68.13	$68.13	$100.83	$120.00	$120.00
	6" Joint	$33.44	$36.79	$36.79	$48.59	$48.59	$52.03	$44.66	$44.66	$124.34	$124.34	$124.34
Directional Bore												
	2" Bore	$20.93	$23.03	$25.33	$35.38	$38.02	$42.79	$53.15	$53.15	$67.31	$58.70	$54.46
	4" Bore	$33.66	$37.03	$40.73	$54.37	$66.61	$89.18	$104.21	$104.21	$105.03	$119.84	$119.84
	6" Bore	$47.89	$52.68	$57.95	$86.56	$105.92	$124.51	$182.17	$182.17	$185.67	$183.25	$183.25
Service:												
Residential												
	Fixed Costs	$1,516.06	$1,410.80	$1,468.81	$1,397.80	$1,692.54	$2,032.58	$2,326.57	$2,326.57	$2,281.42	$1,876.07	$1,667.92
	Cost per foot (Extension)	$6.44	$6.49	$7.88	$9.69	$12.84	$17.57	$23.10	$23.10	$29.12	$25.55	$22.81
	Footage Allowance	300	313	265	295	201	177	158	158	92	88	117
	Excess Cost per foot	$7.43	$7.74	$9.60	$12.72	$16.45	$21.67	$28.29	$28.29	$36.82	$24.10	$21.26
Non-Residential												
	Fixed Costs	$2,763.36	$2,888.44	$2,883.69	$3,230.80	$4,095.89	$3,994.10	$4,497.45	$4,497.45	$4,803.91	$4,207.87	$3,349.71
	Cost per foot (Extension)	$9.44	$11.98	$14.29	$19.39	$23.30	$28.31	$33.62	$33.62	$37.17	$37.17	$25.17
	Excess Cost per foot	$11.28	$14.62	$17.39	$25.22	$29.84	$35.16	$41.63	$41.63	$47.01	$30.03	$23.46
Joint												
	Fixed Costs	$1,274.64	$1,265.48	$1,234.98	$993.04	$959.65	$1,107.46	$1,419.94	$1,419.94	$1,764.57	$1,562.02	$1,797.30
	Cost per foot (Extension)	$8.76	$8.38	$12.72	$13.60	$14.07	$17.24	$20.06	$20.06	$23.11	$20.70	$18.70
	Footage Allowance	248	260	183	240	235	234	227	227	138	124	152
	Excess Cost per foot	$10.61	$10.07	$15.64	$18.12	$18.68	$22.06	$25.52	$25.52	$29.23	$19.55	$17.28

Question:

30. Refer to response MNSC-CE-0024 part a.

a. What are the 2025 updated footage allowances for residential and commercial customers for new gas-only and gas-plus-electric installations?

b. How are "excess footage charges" calculated?

c. How much does the Company charge residential customers for "excess footage beyond the standard service footage allowance" per foot?

d. Is it correct that gas-only residential customers are responsible for a $200 connection fee in place of a revenue deficiency charge (calculated as the net present value of future service revenues and costs)?

Response:

a. The updated footage allowances for 2025 are as follows:
    1. For residential customers, the gas-only allowance is 117 feet, effective March 1, 2025
    2. For residential customers, the joint gas/electric allowance is 152 feet, effective March 1, 2025.
    3. Commercial customers do not have a footage allowance.
b. The excess footage charges are calculated in conjunction with the footage allowances provided in part a. of this response. After determining the footage that can be included with the $200 connection fee, the excess charge per foot is calculated using the same cost of service model as the footage allowance but recalculates the installation cost components of the model by adding an additional foot to the service length determined to be the footage allowance. The cost increase associated with the additional foot of service installation is determined to be the excess footage charge. The calculation can be summarized as follows: [((Model Cost of Project at X Feet) – (Model Cost Of Project At (X-1) Feet)) / ((X - (X-1)))]
c. Effective March 1, 2025, the residential gas-only customers, any excess footage beyond the 117-foot allowance incurs an additional charge of $21.26 per foot. For joint gas/electric installations, any footage beyond the 152-foot allowance incurs an additional charge of $17.28 per foot.
d. The connection fee of $200, and any associated excess footage charges are utilized when appropriate for new residential service connections. The application of these charges to a service connection request does eliminate the need to perform individual revenue deficiency charge calculations for residential connections.

Witness: Lincoln D. Warriner
Date: March 18, 2025

Question:

19. Please describe the Company's line extension policy for attaching new residential and commercial customers to the gas system.
a. Does the Company provide a certain length of main or service extension to connect new customers at no cost to the new customer? If so, what length of main or service will the Company install free-of-charge?
b. Are new customers responsible for paying for any portion of the cost for the necessary main and service extensions required to serve their load?
i. If so, what costs are new customers responsible for?
ii. If so, please describe the formula for determining new customer contributions.
iii. If so, please describe how and when the new customer pays these costs.
1. If new customer contributions are based on estimates, is there any reconciling mechanism to recover actual costs?
iv. For each of the last five years and for each rate schedule, please provide average new customer contributions and actual incurred costs.

Response:

a. **No Cost main/service extension: –** The Company does not offer a no cost option for gas service or main installations. The Company calculates a net present value of future service revenues and costs to determine a revenue deficiency charge that is included in the customers required contribution for main and service installations. For residential customer service installations, the revenue deficiency charge is a simplified $200 connection fee plus any excess footage beyond the standard service footage allowance that is included with the $200 connection fee. During 2024, the Company implemented a footage allowance of 88 feet for residential customers that apply for a gas only service installation and 124 feet for residential customers that apply for a joint installation with electric service. This updated the prior footage allowance of 92 feet for gas only and 138 feet for joint installation with electric service that was implemented in 2023. The 2025 footage allowance updates will be determined during the month of February 2025.
b. **Are connecting customers responsible for main/service extension costs:** Yes
    i. **What costs are connecting customers responsible for** - A customer contribution shall be required totaling the following components: Connection Fee, any Revenue Deficiency, any Excessive Service Line Fee, and any Direct Charges. Direct Charges include, but are not limited to, any specific license fees, inspection fees, or rights of way fees charged by any political subdivision for any construction provided under this rule and are to be paid directly to the Company. Direct charges shall also include an additional charge per foot for winter construction of all underground construction as installed, excluding conduit, applied to projects constructed during the period of December 15 to April 15, for installation of distribution or service facilities.
    ii. **Formula for determining customer contributions:** A discounted Cost of Service Model (Model) will be used to calculate the Net Present Value (NPV) Revenue Deficiency anticipated from a Project. The Model will use the expected incremental revenues and incremental costs associated with the Project for each year of a twenty year period. From this information an annual net revenue excess or deficiency will be calculated. The annual net revenue excess or deficiency will be discounted and summed to determine the NPV

revenue deficiency of the Project. If the NPV revenue deficiency is negative, the discounted revenues exceed the discounted costs, then an NPV revenue deficiency of zero will be used. For residential customers, the revenue deficiency calculation is simplified into a flat charge and excess service line charges. A customer may also be required to pay direct charges as part of their contribution. These direct charges are for project specific costs, and there is not a general formula for their calculation.

iii. **Customer Payments:** The primary timing of customer contribution payments is prior to the scheduling of construction field work. Tariff Rule C8.C. does allow the Company to collect a customer contribution after field work completion but before meter installation if needed to facilitate the scheduling of field work. How and when the customer pays these costs – should we copy the text from Tariff Rule C8.C.

1. **Reconciliation mechanism:** At the time a construction work order is closed out after the completion of construction field work, a reconciliation is made of the actual footage installed to the estimated footage used to determine the initial customer contribution. Differences in installed footage would result in an adjustment to the customer's contribution. The contribution paid by the customer is not adjusted for other work order cost variances from estimates.

iv. **Five years of contributions and actual incurred costs:** Average new customer contributions and actual incurred costs are provided in the attachment to this response named U21806-MNSC-CE-024_Warriner_ATT_1. This information is not available to report by rate schedule.

Witness: Lincoln D. Warriner
Date: January 31, 2025

21806-MNSC-CE-0024_Warriner_ATT_1

Average New Customer Contributions and Actual Incurred Costs

Total New Business Program Capital Expenditures

(a)	(b)	(c)	(d) = (b + c)	(e)	(f) = (c/e)	(g) = (d/e)	(h) = (b/e)
Year	New Business Program Capital Expenditures	Customer Contributions	Actual Incurred Costs	Service Installation Counts	Contributions divided by Service Installation Count	Incurred Cost divided by Service Installation Count	Capital Expenditures divided by Service Installation Count
2019	86,497,872	8,713,637	95,211,509	8,223	1,060	11,579	10,519
2020	87,021,295	6,324,568	93,345,863	7,236	874	12,900	12,026
2021	55,373,118	5,702,775	61,075,892	7,861	725	7,769	7,044
2022	74,087,970	7,042,316	81,130,286	7,719	912	10,510	9,598
2023	76,319,516	10,700,511	87,020,027	6,870	1,558	12,667	11,109
Preliminary 2024	60,032,373	8,622,398	68,654,771	5,950	1,449	11,539	10,089

Notes:
Column (d) = Column (b) + Column (c)
Column (f) = Column (c) divided by Column (e)
Column (g) = Column (d) divided by Column (e)
Column (h) = Column (b) divided by Column (e)

New Business Program Capital Expenditures Excluding Large New Business

(a)	(b)	(c)	(d) = (b + c)	(e)	(f) = (c/e)	(g) = (d/e)	(h) = (b/e)
Year	New Business Program Capital Expenditures (Excluding Large New Business)	Customer Contributions (Excluding Large New Business)	Actual Incurred Costs (Excluding Large New Business)	Service Installation Counts	Contributions divided by Service Installation Count	Incurred Cost divided by Service Installation Count	Capital Expenditures divided by Service Installation Count
2019	68,584,302	8,713,637	77,297,939	8,223	1,060	9,400	8,341
2020	53,580,863	6,324,568	59,905,431	7,236	874	8,279	7,405
2021	52,967,061	5,702,775	58,669,836	7,861	725	7,463	6,738
2022	73,240,232	7,042,316	80,282,548	7,719	912	10,401	9,488
2023	66,948,223	9,851,565	76,799,789	6,870	1,434	11,179	9,745
Preliminary 2024	52,271,384	8,621,343	60,892,727	5,950	1,449	10,234	8,785

Notes:
Column (d) = Column (b) + Column (c)
Column (f) = Column (c) divided by Column (e)
Column (g) = Column (d) divided by Column (e)
Column (h) = Column (b) divided by Column (e)
Column (h) is calculated in a consistent manner as Table 5 on page 19 of my direct testimony

Question:

21. Please refer to Consumers Energy's current Rate Book, section C8 (Customer Attachment Program).
a. What is the current additional charge per foot for winter construction?
i. When was the last review of Consumers' actual additional costs for winter construction?
ii. Please provide the analysis used at the time of the last review showing the relationship between the actual costs and the additional charge per foot.
b. Regarding the Fixed Monthly Surcharge: Please confirm that the discount rate used for the calculation of this surcharge is the value defined in C8.I. (6).
c. Please provide the Service Line Limit (as the term is used in section C8.E.) for each geographic location and category of customers for which it is defined.
d. Please provide the assumptions and methods used to calculate the Service Line Limit for each geographic location and category of customers, such that the Service Line Limit equals the "point at which the cost of the customer's service requirements are greater than the allowance based on the Cost of Service Model." (C8.E.)
e. Please provide the discounted cost of service model referred to in section C8.H. Revenue Deficiency.
f. Regarding incremental revenues and incremental costs:
i. Please detail the method and assumptions used to estimate the incremental revenues and incremental costs associated with a proposed Project for each year of a twenty-year period.
ii. For the attachment of a typical primary residential home, does the Company assume that the attaching customer's gas consumption will be the same for twenty years? If not, how does the Company assume that gas consumption will change?
iii. Please provide the Company's most recent analysis of the difference between the estimated incremental revenues and incremental costs associated with Customer Attachments and the actual incremental revenues and incremental costs associated with those attachments.
iv. Please identify the data and assumptions used to complete this analysis.
v. Please provide the data and assumptions used to complete this analysis.
g. Does the discounted cost of service model used to calculate the Revenue Deficiency assume a constant level of consumption by the customers that are served by the Project? If not, how does the Company estimate the changes in consumption over time?
h. What is the current value of the Carrying Cost Rate as defined in C8.I (6)?
i. How many Customer Attachment Projects has the Company completed in each of the last three years?
i. If available, please also provide a count of the number of primary residential home Customer Attachment Projects.
j. Please provide the depreciation rates used to calculate the Depreciation expense defined in C8.I (4).
k. Please provide the current values used for Property Taxes and Other (Incremental) Operating Expenses in C8.I (5).
l. Please provide the current value of the discount rate defined in section C8.I. (6), along with the values used to calculate it.
i. Are the values used pre-tax or after-tax values?

Partial Response:

a. **Winter Construction** - The winter construction charges are currently $3.00 per foot for single energy (or gas only) trench footage; for a joint gas/electric trench the cost is split $2.00 for gas

and $1.00 for electric. The $3.00 per foot winter construction charge was authorized in Case No. U-10755 and was effective for service rendered on and after March 12, 1996. The analysis performed to support the winter construction charge in that proceeding is not known and cannot be located in response to this request.

b. **Fixed Monthly Surcharge** – Yes, effective October 1, 2024, the discount rate of 7.07% is the current discount rate used for the calculation of the fixed monthly surcharge defined in C8.I. (6).

c. **Service Line Limit** – Effective March 1, 2024, the Service Line Limit for a residential or small commercial service within the geographic area of Consumers Energy's Service Territory is 88 feet for single energy (or gas only) trench, and 124 feet for a joint gas/electric trench.

d. **Service Line Limit Assumptions and Methods** – The Method used is described in tariff C8 H. (Revenue Deficiency) and the assumptions are outlined in C8 I. (Model Assumptions). The Company will confirm load estimates with customers to determine if a three-year average is appropriate for incremental revenues, or if an installed equipment estimate would be more appropriate. The source for the carrying cost rate component of the incremental costs is determined by the pre-tax cost of capital rate approved in our most recent rate case. The source for the plant in service estimate is either a three-year average construction cost for residential and small commercial customers, or a project management estimate for larger customer requests. The source for depreciation rates used to calculate the depreciation component of incremental costs are the approved rates determined in the Company's most recent depreciation case. Property tax rate tables are maintained by the Company's tax department and incremental operating expenses rates are derived from the cost of service study from the Company's most recent approved rate case. The discount rate used in the net present value calculation is the after tax cost of capital approved in the Company's most recent rate case.

e. **Discounted Cost of Service Model**: The model used by the Company to determine the revenue deficiency charge associated with a new installation project is an internal web application and is not available for external sharing. However, the Company is pleased to offer a demonstration to interested parties. We can arrange an in-person meeting for a small group to showcase the model's capabilities.

f. **Incremental Revenues and Incremental Costs** –

    a. **Part i**: **Method and Assumptions**: The Method used is described in tariff C8 H. (Revenue Deficiency) and the assumptions are outlined in C8 I. (Model Assumptions). The Company will confirm load estimates with customers to determine if a three-year average is appropriate for incremental revenues, or if an installed equipment estimate would be more appropriate. The source for the carrying cost rate component of the incremental costs is determined by the pre-tax cost of capital rate approved in our most recent rate case. The source for the plant in service estimate is either a three-year average construction cost for residential and small commercial customers, or a project management estimate for larger customer requests. The source for depreciation rates used to calculate the depreciation component of incremental costs are the approved rates determined in the Company's most recent depreciation case. Property tax rate tables are maintained by our Company's tax department and incremental operating expenses rates are derived from the cost of service study from the Company's most recent

approved rate case. The discount rate used in the net present value calculation is the after tax cost of capital approved in the Company's most recent rate case.

b. **Part ii**: **Customer Gas Consumption**: Yes for a typical residential home, an average consumption value for the most recent three-year period is held constant over the 20-year evaluation period as a default projection. However, if there are additional considerations that need to be incorporated into the projection, the Company has the capability to adjust future year projections to reflect any customer specific factors that impact expected future revenues.
c. **Part iii**: **Most recent analysis**: Please refer to the attachment named U21806-MNSC-CE-0020_Warriner_ATT_1.pdf that was provided as part of my response to U21806-MNSC-CE-0020. That is the most recent analysis of the incremental revenues and incremental costs associated with customer attachments.
d. **Part iv**: **Data and Assumptions:** Please refer to the attachment named U21806-MNSC-CE-0020_Warriner_ATT_1.pdf that was provided as part of my response to U21806-MNSC-CE-0020 for the data and assumptions used as part of that analysis.
e. **Part v: Data and Assumptions:** Please refer to the attachment named U21806-MNSC-CE-0020_Warriner_ATT_1.pdf that was provided as part of my response to U21806-MNSC-CE-0020 for the data and assumptions used as part of that analysis.

g. **Modeled Customer Consumption Over Time** – For residential customers who will start using gas immediately, their consumption is modeled as a constant over the 20-year evaluation period, based on a recent 3-year average. For commercial customers, consumption is calculated using equipment specifications, load diversification, and annual usage patterns to determine an overall annual consumption, which is then applied as a constant over the 20-year period. For residential developments with empty lots, the 3-year average consumption is used for each lot, That revenue is distributed over the 20-year period according to a build-out plan provided by the developer. If a comparable development build-out is not available, a default saturation rate is applied: 25% of lots for years 1 and 2, 15% for years 3 and 4, and 5% for years 5 through 8. The service saturation schedule can be applied to any project if it is determined that the load will change over the 20-year period, making it project-specific.
h. **Carrying Cost Rate**: The current value of the carrying cost rate, effective October 1, 2024, is 8.74%. The current value of the discount rate which is defined in C8.1 (6) is 7.07%, which is also effective October 1, 2024.
i. **Customer Attachment Projects**: Service installations completed in Customer Attachment Project areas are as follows: 2021 – 263 services, 2022 – 95 services, 2023 – 215 services.
j. Please refer to Company Witness Heather Rayl's partial response to this request.
k. Please refer to Company Witness Heather Rayl's partial response to this request.
l. Please refer to Company Witness Heather Rayl's partial response to this request.

Witness: Lincoln D. Warriner
Date: January 31, 2025

Question:

26. Does the Company track whether new customers consume gas in the amounts assumed in the calculations used to determine customer contributions to the cost of new connections?

a. If yes, please provide any summary or average data in the Company's possession regarding the gas consumed by new customers, as well as the corresponding assumptions used when assessing those customer connections.

b. If not, why not?

Response:

No, the Company does not reconcile individual customer consumption used to estimate customer installation contributions with actual customer consumption. Creating, implementing, and maintaining a customer consumption reconciliation process over the 20-year net present value analysis period would be a costly administrative burden.

Witness: Lincoln D. Warriner
Date: January 31, 2025

Question:

13. Please refer to pages 4 to 5 of the Direct Testimony of Ahmed, regarding annual gas delivery forecasts and the impacts of exogenous factors, and page 83 of the Natural Gas Delivery Plan provided as Exhibit A-42 of the Direct Testimony of Dreisig.

a. Please provide historical annual natural gas savings from the Company's EWR programs by customer class from 2016 through 2023, in terms of Mcf and percentage of sales.

b. Please provide historical cost of natural gas savings from the Company's EWR programs by customer class from 2016 through 2023, in terms of $ per Mcf.

c. Please provide the forecasted annual natural gas savings from the Company's EWR programs by customer class from 2024 through 2034, in terms of Mcf and percentage of sales.

d. Please provide the forecasted cost of natural gas savings from the Company's EWR programs by customer class, in terms of $ per Mcf.

e. Please explain how the Company's gas forecasts incorporate the impacts of future EWR programs on gas sales.

f. Please explain if the impacts of the state's climate and clean energy laws, in particular Senate Bill 273 that enhances the EWR programs and also supports electrification and fuel switching, are incorporated into the Company's forecasts of customer counts and sales. Please compare this consideration between the models utilized by Ahmed and the models utilized in the Natural Gas Delivery Plan.

vii. If so, please explain how the company incorporated the impact.

viii. If not, explain the company's expectation about the impact of Senate Bill 273 on natural gas sales.

Response:

f. Pertaining to Senate Bill 273, the Company did not include any incremental impacts associated with EWR beyond the current plan. Given that Senate Bill 273 has not passed, the Company views it as a signpost to monitor and has not performed a full analysis on its potential impacts to natural gas sales.

Witness: NEAL P. DREISIG
Date: January 29, 2025

Question:

15. Please refer to Figure 30 of the Natural Gas Delivery Plan regarding the number of service connections.
a. Please provide the underlying data for the number of service connections, separately for new construction buildings and existing buildings from 2014 to 2035.
b. Please provide the underlying data for the number of new construction buildings from 2024 through 2035, separately for residential buildings and commercial buildings.
c. What fraction of the new construction buildings does the Company assume will use natural gas for space and water heating from 2024 through 2035?
i. How did the Company develop this assumption?
ii. Please also provide all data sources the Company used to determine the natural gas fraction among all new construction buildings.

Response:

a. The underlying data for the Company's historical service connection volumes and projected service connection volumes are provided in attachments named U21806-MNSC-CE-0020_Warriner_ATT_1, U21806-MNSC-CE-0020_Warriner_ATT_2, U21806-MNSC-CE-0020_Warriner_ATT_3, and U21806-MNSC-CE-0020_Warriner_ATT_4. U21806-MNSC-CE-0020_Warriner_ATT_1 provides a summary of the historical service connection volumes for 2014 through 2023 on page 10 of that attachment. U21806-MNSC-CE-0020_Warriner_ATT_2 is a listing of service connection work orders that support a preliminary 2024 actual service connection volume of 5,950 units. U21806-MNSC-CE-0020_Warriner_ATT_3 is a listing of service connection work orders that support the summary of 2014 through 2023. U21806-MNSC-CE-0020_Warriner_ATT_4 documents the projections of 2024 through 2035 that are summarized in Figure 30 of the Natural Gas Delivery Plan. The Company's service connection work order count reports do not provide for a breakdown between new construction buildings and existing buildings.

b. The underlying data is provided in U21806-MNSC-CE-0020_Warriner_ATT_4. The projections supported in U21806-MNSC-CE-0020_Warriner_ATT_4 were developed based on economic considerations described on page 60 of the Natural Gas Delivery Plan and on pages 14 through 16 of my direct testimony. The Company's service connection projections are developed in total; separate projections for residential buildings and commercial buildings cannot reasonably be determined from the underlying historical service connection volumes provided in U21806-MNSC-CE-0020_Warriner_ATT_3.

c. Please refer to U21806-MNSC-CE-0020_Warriner_ATT_4 and the economic considerations described on page 60 of the Natural Gas Delivery Plan and on pages 14 through 16 of my direct testimony. The Company's service connection projections attempt to quantify a reasonable expectation of service connection workload requiring future capital investment. That projection is not intended to predict the number of new construction buildings, and likewise is not intended to predict the fraction of new construction buildings that will apply for natural gas service.

Witness: Lincoln D. Warriner
Date: January 31, 2025

Lincoln D. Warriner

From: GEORGE A. PERRY III
Sent: Friday, July 26, 2024 1:20 PM
To: Lincoln D. Warriner
Subject: RE: New Business Trend 2024 and beyond

- 2023
  - End the Year at 6870
- 2024
  - 6800 Service Connections
    - Avg 4200 connections from July to December, currently at 2608 End of June
- 2025
  - 6800 Service Connections
    - Assuming Flat
      - Presidential year
        - Anticipation of the Market to adjust to regulation impacts
- 2026
  - 7000 Service Connections
    - Assuming 3% growth
      - Inflation projected to steadily decline which has an impact on mortgage interest rates and increase the interest of potential buyers. Additionally housing supply in Michigan is down currently and projected to increase demand for supply in Michigan.
- 2027
  - 7200 Service Connections
    - Assuming 3% growth
      - Inflation projected to steadily decline which has an impact on mortgage interest rates and increase the interest of potential buyers. Additionally housing supply in Michigan is down currently and projected to increase demand for supply in Michigan.
- 2028
  - 7400 Service Connections
    - Assuming 3% growth
      - Inflation projected to steadily decline which has an impact on mortgage interest rates and increase the interest of potential buyers. Additionally housing supply in Michigan is down currently and projected to increase demand for supply in Michigan.
- 2029
  - 7600 Service Connections
    - Assuming Flat
      - Presidential year
        - Anticipation of the Market to adjust to regulation impacts
- 2030
  - 7800 Service Connections
    - Assuming 3% growth
- 2031
  - 7800 Service Connections
- 2032

  - 7800 Service Connections
- 2033
  - 7800 Service Connections
- 2034
  - 7800 Service Connections
- 2035
  - 7800 Service Connections

George Perry III
Sr. Manager Work Management & Customer Delivery S.E. Zone
WORKING TO DELIVER THE ENERGY YOU NEED, WHENEVER YOU NEED IT.
THAT'S OUR PROMISE TO MICHIGAN!
Please consider the environment before printing this email
Consumers Energy
Count on Us

From: GEORGE A. PERRY III
Sent: Friday, July 26, 2024 12:04 PM
To: Lincoln D. Warriner <LINCOLN.WARRINER@cmsenergy.com>
Subject: New Business Trend 2024 and beyond

Hey Lincoln,

Sorry for the delay. Based on the current trend, this is what I am projecting.

- 2023
  - End the Year at 6870
- 2024
  - 6800 Service Connections
    - Avg 4200 connections from July to December, currently at 2608 End of June
- 2025
  - 6800 Service Connections
    - Assuming Flat
      - Presidential year
      - Inflation changes
      - Interest Rates
- 2026
  - 7000 Service Connections
    - Assuming 3% growth
      - Inflation changes
      - Interest Rate changes

George Perry III
Sr. Manager Work Management & Customer Delivery S.E. Zone
WORKING TO DELIVER THE ENERGY YOU NEED, WHENEVER YOU NEED IT.

THAT'S OUR PROMISE TO MICHIGAN!

Please consider the environment before printing this email

Consumers Energy
Count on Us

Question:

20. Refer to the Company's response to U21806-MNSC-CE-0020.
a. Refer to U21806-MNSC-CE-0020_Warriner_ATT_1 through ATT_3 regarding historical gas service connections. Please provide the historical service connection data, separately for residential, commercial, and industrial customers.
b. Refer to U21806-MNSC-CE-0020_Warriner_ATT_4 regarding projected gas service connections.
i. Please provide the projected service connection data, separately for residential, commercial, and industrial customers.
ii. Please provide the number of new housing constructions in Michigan from 2014 to 2023 by year with a breakdown of the share of fuel types for space heating.
c. U21806-MNSC-CE-0020_Warriner_ATT_4 provides the following explanation as the basis for a 3% annual growth rate of service connections: "Inflation projected to steadily decline which has an impact on mortgage interest rates and increase the interest of potential buyers. Additionally housing supply in Michigan is down currently and projected to increase demand for supply in Michigan."
i. Please provide all the analysis and assumptions the Company used to develop the 3% annual growth rate.
ii. Please provide studies and analyses demonstrating the relationships between inflation rates, mortgage interest rates, housing supply and gas service connections.
iii. Please provide the historical data from 2014 to 2023 for inflation rates, mortgage interest rates, housing supply, and gas service connections, relevant to the Company's jurisdiction in Michigan.

Response:

a. **Service connections:** The following table provides the available historical service installation counts for residential and commercial service connections. There is not a separate indicator for industrial customer new services, so those customers would be included in the Commercial category.

	2017	2018	2019	2020	2021	2022	2023	2024
Total	8482	9423	8223	7236	7861	7719	6870	5950
# of Residential Services	7464	8669	7565	6585	7311	7101	6314	5445
# of Commercial Services	1018	754	658	651	550	618	556	505
% Residential	88%	92%	92%	91%	93%	92%	92%	92%
% Commercial	12%	8%	8%	9%	7%	8%	8%	8%

b.i. **Service connection forecasts by customer class:** The Company does not have separate service connection projections for residential, commercial, and industrial customer classifications.

b.ii. **New housing construction space heating fuels:** Housing Start indicators for Michigan from 2014 to 2023 by year are provided in the attachment named U21806-MNSC-CE-0585-Warriner_ATT_1. These indicators are not quantified for the share of space heating fuel types, however the most recent Winter Energy Appraisal by the Michigan Public Service Commission Staff indicates that 77% of Michigan households use natural gas as a fuel source for space heating (source: https://www.michigan.gov/mpsc/-/media/Project/Websites/mpsc/regulatory/reports/energy-appraisal/2024-2025_Winter_Energy_Appraisal.pdf).

c.i. **3% annual growth rate:** The 3% growth rate starting in 2026 is a general estimate of the average trend of overall economic growth. No specific analysis or detailed assumptions were utilized to develop that estimated growth rate.

c.ii. **Studies of housing/service connections:** Please refer to the attachment named U21806-MNSC-CE-0585-Warriner_ATT_2 for an internally developed analysis of historical mortgage rates and gas service connections. U21806-MNSC-CE-0585-Warriner_ATT_3 explains the interaction between inflation and interest rates. In summary, when inflation slows down the Federal Reserve can reduce interest rates; interest rates are adjusted upward when the rate of inflation becomes a concern for overall economic activity. U21806-MNSC-CE-0585-Warriner_ATT_4 explains the interaction between interest rates and demand for housing, which must be met with housing supply. In summary, elevated interest rates reduce the demand for housing by making new housing less affordable (which impacts demand) than existing housing units that have been financed at lower rates. The idea that housing construction influences the level of gas service connections is not simply based on the Company's experience with taking requests for service at newly constructed homes.

c.iii. **Historical data**: Historical inflation rates (CPI-U) are provided on page 3 of this response, mortgage interest rates are provided the attachment named U21806-MNSC-CE-0585-Warriner_ATT_2, Michigan Housing Start indicators are provided in the attachment named U21806-MNSC-CE-0585-Warriner_ATT_1, and gas service connections are provided in the attachment named U21806-MNSC-CE-0585-Warriner_ATT_2.

Historical Percent Change in Consumer Price Index (CPI-U)

Year	Percent Change in CPI-U
2014	**1.6%**
2015	**0.1%**
2016	**1.3%**
2017	**2.1%**
2018	**2.4%**
2019	**1.8%**
2020	**1.2%**
2021	**4.7%**
2022	**8.0%**
2023	**4.1%**

Witness: Lincoln D. Warriner
Date: March 19, 2025

MICHIGAN PUBLIC SERVICE COMMISSION
CONSUMERS ENERGY COMPANY
PART III - Standard Filing Requirements
Provide the employment and industrial production forecasts that were used as inputs in the forecasting model.

Year	Month	Empl. Weighted Production	Service Production	Real GCP	HSTART
2013	1	93.64	98.45	97.78	15.04
2013	2	93.97	98.56	97.87	15.18
2013	3	94.32	98.67	97.96	15.30
2013	4	94.68	98.77	98.05	15.39
2013	5	95.05	98.87	98.15	15.45
2013	6	95.43	98.97	98.24	15.50
2013	7	95.81	99.07	98.34	15.53
2013	8	96.19	99.17	98.44	15.54
2013	9	96.56	99.27	98.54	15.54
2013	10	96.91	99.38	98.66	15.53
2013	11	97.25	99.49	98.78	15.52
2013	12	97.56	99.61	98.90	15.50
2014	1	97.84	99.74	99.04	15.47
2014	2	98.08	99.87	99.19	15.45
2014	3	98.30	100.02	99.34	15.43
2014	4	98.49	100.17	99.51	15.43
2014	5	98.65	100.32	99.68	15.43
2014	6	98.79	100.48	99.86	15.45
2014	7	98.92	100.65	100.04	15.48
2014	8	99.03	100.82	100.23	15.54
2014	9	99.13	101.00	100.42	15.63
2014	10	99.23	101.18	100.62	15.75
2014	11	99.32	101.36	100.82	15.90
2014	12	99.42	101.55	101.01	16.09
2015	1	99.52	101.73	101.21	16.31
2015	2	99.63	101.92	101.41	16.59
2015	3	99.74	102.11	101.61	16.90
2015	4	99.87	102.30	101.80	17.24
2015	5	99.99	102.48	101.99	17.61
2015	6	100.13	102.66	102.17	18.00
2015	7	100.26	102.84	102.35	18.41
2015	8	100.41	103.01	102.52	18.82
2015	9	100.55	103.18	102.69	19.24
2015	10	100.69	103.34	102.84	19.65
2015	11	100.84	103.49	102.99	20.06
2015	12	100.98	103.63	103.12	20.45
2016	1	101.13	103.76	103.24	20.82
2016	2	101.27	103.88	103.35	21.16
2016	3	101.41	103.99	103.45	21.47
2016	4	101.55	104.09	103.54	21.76
2016	5	101.69	104.18	103.62	22.00
2016	6	101.83	104.27	103.70	22.21
2016	7	101.97	104.36	103.78	22.38
2016	8	102.11	104.44	103.87	22.51
2016	9	102.25	104.52	103.95	22.60
2016	10	102.40	104.61	104.05	22.63
2016	11	102.54	104.70	104.15	22.62
2016	12	102.69	104.79	104.26	22.55
2017	1	102.83	104.89	104.39	22.43
2017	2	102.98	105.00	104.54	22.25
2017	3	103.13	105.12	104.70	22.03
2017	4	103.29	105.24	104.87	21.76

MICHIGAN PUBLIC SERVICE COMMISSION
CONSUMERS ENERGY COMPANY
PART III - Standard Filing Requirements
Provide the employment and industrial production forecasts that were used as inputs in the forecasting model.

Year	Month	Empl. Weighted Production	Service Production	Real GCP	HSTART
2017	5	103.44	105.38	105.06	21.47
2017	6	103.59	105.52	105.25	21.16
2017	7	103.74	105.67	105.46	20.85
2017	8	103.89	105.83	105.67	20.54
2017	9	104.03	106.00	105.88	20.24
2017	10	104.17	106.19	106.10	19.96
2017	11	104.31	106.38	106.31	19.71
2017	12	104.44	106.58	106.53	19.51
2018	1	104.56	106.79	106.75	19.36
2018	2	104.67	107.00	106.95	19.26
2018	3	104.76	107.22	107.15	19.23
2018	4	104.82	107.43	107.33	19.23
2018	5	104.83	107.61	107.48	19.28
2018	6	104.79	107.76	107.59	19.35
2018	7	104.66	107.86	107.66	19.44
2018	8	104.46	107.91	107.68	19.54
2018	9	104.15	107.88	107.64	19.64
2018	10	103.74	107.78	107.53	19.74
2018	11	103.19	107.59	107.34	19.82
2018	12	102.51	107.30	107.08	19.87
2019	1	101.69	106.89	106.72	19.89
2019	2	100.70	106.37	106.27	19.88
2019	3	99.59	105.75	105.74	19.83
2019	4	98.38	105.06	105.17	19.75
2019	5	97.13	104.32	104.56	19.66
2019	6	95.85	103.57	103.95	19.56
2019	7	94.60	102.82	103.36	19.46
2019	8	93.40	102.10	102.81	19.37
2019	9	92.29	101.45	102.32	19.30
2019	10	91.31	100.87	101.92	19.25
2019	11	90.50	100.41	101.64	19.24
2019	12	89.89	100.09	101.49	19.27
2020	1	89.51	99.93	101.50	19.35
2020	2	89.41	99.95	101.69	19.49
2020	3	89.54	100.13	102.03	19.68
2020	4	89.88	100.46	102.51	19.91
2020	5	90.40	100.91	103.09	20.17
2020	6	91.07	101.45	103.75	20.44
2020	7	91.85	102.06	104.47	20.73
2020	8	92.72	102.72	105.22	21.01
2020	9	93.63	103.40	105.98	21.28
2020	10	94.56	104.09	106.71	21.52
2020	11	95.48	104.75	107.40	21.73
2020	12	96.34	105.36	108.02	21.90
2021	1	97.13	105.90	108.54	22.01
2021	2	97.81	106.35	108.95	22.06
2021	3	98.39	106.73	109.26	22.04
2021	4	98.88	107.04	109.50	21.98
2021	5	99.27	107.31	109.68	21.87
2021	6	99.58	107.55	109.85	21.73
2021	7	99.82	107.78	110.00	21.55
2021	8	100.00	108.02	110.18	21.34

MICHIGAN PUBLIC SERVICE COMMISSION
CONSUMERS ENERGY COMPANY
PART III - Standard Filing Requirements
Provide the employment and industrial production forecasts that were used as inputs in the forecasting model.

Year	Month	Empl. Weighted Production	Service Production	Real GCP	HSTART
2021	9	100.11	108.28	110.41	21.12
2021	10	100.18	108.58	110.70	20.89
2021	11	100.20	108.94	111.09	20.65
2021	12	100.19	109.37	111.59	20.41
2022	1	100.15	109.89	112.23	20.18
2022	2	100.10	110.51	113.03	19.97
2022	3	100.02	111.21	113.97	19.78
2022	4	99.94	111.99	115.02	19.60
2022	5	99.84	112.83	116.16	19.44
2022	6	99.73	113.69	117.35	19.31
2022	7	99.62	114.58	118.57	19.21
2022	8	99.50	115.46	119.80	19.13
2022	9	99.39	116.33	121.01	19.08
2022	10	99.27	117.16	122.17	19.07
2022	11	99.16	117.93	123.26	19.09
2022	12	99.06	118.64	124.25	19.14
2023	1	98.97	119.25	125.11	19.24
2023	2	98.90	119.76	125.82	19.37
2023	3	98.83	120.18	126.39	19.54
2023	4	98.78	120.51	126.84	19.73
2023	5	98.73	120.76	127.19	19.93
2023	6	98.70	120.95	127.44	20.15
2023	7	98.67	121.09	127.61	20.37
2023	8	98.65	121.18	127.72	20.59
2023	9	98.63	121.24	127.79	20.79
2023	10	98.62	121.27	127.82	20.97
2023	11	98.61	121.30	127.83	21.12
2023	12	98.60	121.32	127.85	21.24
2024	1	98.60	121.36	127.88	21.31
2024	2	98.59	121.41	127.94	21.33
2024	3	98.59	121.49	128.02	21.31
2024	4	98.58	121.57	128.12	21.24
2024	5	98.58	121.67	128.25	21.15
2024	6	98.57	121.79	128.39	21.03
2024	7	98.56	121.91	128.54	20.88
2024	8	98.55	122.03	128.70	20.73
2024	9	98.54	122.16	128.87	20.57
2024	10	98.52	122.29	129.04	20.40
2024	11	98.51	122.42	129.21	20.25
2024	12	98.49	122.55	129.37	20.10
2025	1	98.47	122.67	129.53	19.97
2025	2	98.44	122.77	129.67	19.87
2025	3	98.42	122.88	129.81	19.78
2025	4	98.39	122.97	129.94	19.72
2025	5	98.37	123.06	130.05	19.68
2025	6	98.34	123.14	130.17	19.65
2025	7	98.31	123.22	130.27	19.63
2025	8	98.29	123.29	130.38	19.62
2025	9	98.27	123.37	130.48	19.62
2025	10	98.26	123.44	130.58	19.62
2025	11	98.24	123.51	130.68	19.63
2025	12	98.24	123.58	130.78	19.63

MICHIGAN PUBLIC SERVICE COMMISSION
CONSUMERS ENERGY COMPANY
PART III - Standard Filing Requirements
Provide the employment and industrial production forecasts that were used as inputs in the forecasting model.

Year	Month	Empl. Weighted Production	Service Production	Real GCP	HSTART
2026	1	98.24	123.65	130.88	19.64
2026	2	98.24	123.73	130.98	19.63
2026	3	98.25	123.80	131.09	19.63
2026	4	98.27	123.88	131.21	19.62
2026	5	98.29	123.96	131.32	19.61
2026	6	98.31	124.04	131.44	19.59
2026	7	98.33	124.12	131.56	19.58
2026	8	98.36	124.21	131.68	19.56
2026	9	98.38	124.29	131.80	19.55
2026	10	98.40	124.37	131.92	19.53
2026	11	98.42	124.46	132.04	19.52
2026	12	98.44	124.54	132.16	19.50
2027	1	98.45	124.63	132.28	19.49
2027	2	98.45	124.71	132.39	19.48
2027	3	98.45	124.79	132.51	19.48
2027	4	98.44	124.87	132.63	19.48
2027	5	98.43	124.96	132.74	19.48
2027	6	98.42	125.03	132.85	19.48
2027	7	98.41	125.11	132.96	19.48
2027	8	98.39	125.19	133.07	19.49
2027	9	98.37	125.26	133.18	19.49
2027	10	98.36	125.33	133.28	19.50
2027	11	98.34	125.40	133.38	19.50
2027	12	98.33	125.47	133.48	19.50
2028	1	98.31	125.53	133.58	19.50
2028	2	98.30	125.60	133.67	19.50
2028	3	98.30	125.66	133.76	19.50
2028	4	98.29	125.71	133.85	19.50
2028	5	98.30	125.77	133.94	19.49
2028	6	98.30	125.83	134.03	19.48
2028	7	98.31	125.88	134.12	19.47
2028	8	98.32	125.94	134.21	19.45
2028	9	98.34	126.00	134.31	19.43
2028	10	98.36	126.06	134.41	19.40
2028	11	98.39	126.13	134.51	19.37
2028	12	98.42	126.20	134.62	19.34
2029	1	98.46	126.27	134.73	19.30
2029	2	98.50	126.35	134.85	19.25
2029	3	98.55	126.43	134.98	19.21
2029	4	98.60	126.51	135.11	19.15
2029	5	98.65	126.60	135.25	19.10
2029	6	98.71	126.69	135.38	19.04
2029	7	98.77	126.78	135.52	18.98
2029	8	98.82	126.88	135.67	18.91
2029	9	98.88	126.97	135.81	18.85
2029	10	98.93	127.06	135.95	18.79
2029	11	98.99	127.16	136.09	18.73
2029	12	99.03	127.25	136.23	18.67

STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of **CONSUMERS ENERGY COMPANY** for authority to increase its rates for the distribution of natural gas and for other relief.	U-21806

PROOF OF SERVICE

On the date below, an electronic copy of **Direct Testimony and Exhibits of Alice Napoleon on behalf of Michigan Environmental Council and Sierra Club (Exhibit MEC-1 through MEC-13)** was served on the following:

Name/Party	E-mail Address
ALJ James M. Varchetti	varchettij@michigan.gov
Consumer Energy Company Anne M. Uitvlugt Bret A. Totoraitis Evan B. Keimach Gary A. Gensch Jr. Spencer A. Sattler Kelly Hall	mpsc.filings@cmsenergy.com anne.uitvlugt@cmsenergy.com bret.totoraitis@cmsenergy.com evan.keimach@cmsenergy.com gary.genschjr@cmsenergy.com spencer.sattler@cmsenergy.com kelly.hall@cmsenergy.com
Michigan Public Service Commission Staff Alena Clark Lori Mayabb Anna B. Stirling Amit T. Singh Michael J. Orris	clarka55@michigan.gov mayabbl@michigan.gov stirlinga1@michigan.gov singha9@michigan.gov orrism@michigan.gov
Michigan Attorney General Celeste R. Gill	ag-enra-spec-lit@michigan.gov gillc1@michigan.gov
Counsel for Association of Businesses Advocating Tariff Equity Stephen A. Campbell Michael J. Pattwell James Dauphinais	scampbell@clarkhill.com mpattwell@clarkhill.com jdauphinais@consultbai.com

Counsel for Energy Michigan, Inc. Laura A. Chappelle Justin K. Ooms Timothy J. Lundgren	 lchappelle@potomaclaw.com jooms@potomaclaw.com tlundgren@potomaclaw.com
Counsel for The Ecology Center, Vote Solar, Environmental Law & Policy Center, and Union of Concerned Scientists, Inc. Daniel H.B. Abrams Alondra Estrada Carolyn Boyce	 MPSCDocket@elpc.org dabrams@elpc.org aestrada@elpc.org cboyce@elpc.org
Counsel for Lansing Board of Water & Light and Michigan State University Nolan J. Moody Cole V. Lussier Mark W. Matus	 nmoody@dickinsonwright.com clussier@dickinsonwright.com mark.matus@lbwl.com
Counsel for Retail Energy Supply Association Jennifer U. Heston	 jheston@fraserlawfirm.com

The statements above are true to the best of my knowledge, information and belief.

Date: April 23, 2025

By: _____

Digitally signed by Natasha Fowles
Date: 2025.04.23 12:51:39 -04'00'

TROPOSPHERE LEGAL, PLC
Counsel for MEC & SC

Natasha Fowles, Legal Assistant
420 E. Front St.
Traverse City, MI 49686
Phone: 231-709-4400
Email: natasha@troposphere legal.com