VEDO EXHIBIT NO. 12.1

BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Application of Vectren Energy Delivery of Ohio, Inc., for Approval of an Alternative Rate Plan	)))	Case No. 18-0049-GA-ALT
In the Matter of the Application of Vectren Energy Delivery of Ohio, Inc. for Approval of an Increase in Gas Rates	)))	Case No. 18-0298-GA-AIR
In the Matter of the Application of Vectren Energy Delivery of Ohio, Inc., for Approval of an Alternative Rate Plan	)))	Case No. 18-0299-GA-ALT

REBUTTAL TESTIMONY OF
RUSSELL A. FEINGOLD
ON BEHALF OF
VECTREN ENERGY DELIVERY OF OHIO, INC.

_____	Management policies, practices, and organization
_____	Operating income
_____	Rate base
_____	Allocations
_____	Rate of return
_X_	Rates and tariffs (Rate Design)
_____	Other

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Rebuttal Testimony of
Russell A. Feingold

I. BACKGROUND AND QUALIFICATIONS

Q1. Please state your name and business address.

A. My name is Russell A. Feingold. My business address is 2525 Lindenwood Drive, Wexford, Pennsylvania 15090. As I indicated in my prior testimony, I am employed by Black & Veatch Management Consulting, LLC (Black & Veatch) as a Vice President and I lead its Rates & Regulatory Services Practice. As noted previously, I am appearing on behalf of Vectren Energy Delivery of Ohio, Inc. (VEDO or the Company).

Q2. Are you the same Russell A. Feingold who submitted Direct Testimony on VEDO's behalf in this proceeding on April 13, 2018?

A. Yes.

Q3. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to the rate design proposals for the Residential and Small General Service (small commercial) classes advocated by the Environmental Law and Policy Center (ELPC), The Office of the Ohio Consumers' Counsel (OCC), and Ohio Partners for Affordable Energy (OPAE). Specifically, I will be responding to the rate design opinions offered by ELPC witness Ron Nelson, OCC witness Wilson Gonzalez, and OPAE witness David C. Rinebolt. In addition to my rebuttal testimony, the Company also is submitting the rebuttal testimonies of J. Cas Swiz and Rina H. Harris.

Q4. How does your rebuttal testimony compliment the Company's other rebuttal testimonies on the issue of Straight Fixed Variable (SFV) rate design?

A. My rebuttal testimony primarily focuses on the utility regulatory policies and ratemaking concepts that support the use of SFV rate design to recover the delivery related cost of

service allocated to VEDO's residential and small commercial service rate classes. Mr. Swiz's rebuttal testimony primarily focuses on the bill impacts of the Stipulation's rate design, including the bill impacts to low use customers. Mr. Swiz also supports the Company's analysis of the relationship between natural gas usage and income for residential customers in its service territory. Ms. Harris presents rebuttal testimony on certain natural gas usage and income data that she attached to her direct testimony. Ms. Harris also testifies on VEDO's progress in meeting its energy efficiency program goals.

Q5. Have you previously testified before the Public Utilities Commission of Ohio (Commission) or any other regulatory authority on rate design issues?

A. Yes. I have testified in several jurisdictions, including Ohio, on a variety of rate design related topics for gas distribution utilities, including SFV rate design. In particular, I testified in the 2008 base rate case of Columbia Gas of Ohio, Inc. (Case No. 08-72-GA-AIR) and sponsored its SFV rate design proposal for residential customers, which the Commission approved.

Q6. Please summarize the findings and conclusions of your rebuttal testimony.

A. Based on my review of the direct and supplemental direct testimonies of other parties in this proceeding who oppose the Stipulation and Recommendation (Stipulation) filed in this matter on January 4, 2019 and address the SFV rate design issue, I have made the following findings and reached the following conclusions:

- The Commission should approve the SFV rate design in the Stipulation filed in this proceeding because it will continue to achieve the benefits to customers and to the Company that the Commission found to be of greatest importance when it first approved an SFV rate design for VEDO's residential service customers in its January 2009 Opinion and Order in Case No. 07-1080-GA-AIR.

- The numerous criticisms made by these other parties of the Company's SFV rate design proposal for its residential and small general (small commercial) service rate classes are based on faulty economics and incorrect assumptions, and fail to

satisfy fundamental regulatory principles that form the foundation for sound utility ratemaking.

- The rate design recommendations of these other parties, which propose to recover a portion of VEDO's revenue requirement (representing the entirety of its gas delivery cost of service) on a volumetric basis from residential and small commercial customers, will create economically inefficient gas prices and send distorted price signals to these customers.

- These other parties' recommendations to revert to a partially volumetric basis for the recovery of the Company's costs of gas delivery service is regressive in nature and will fail to achieve the numerous beneficial aspects of an SFV rate design that VEDO's customers have experienced since 2009 because the resulting volumetric rate design these parties propose:

    - Will not be reflective of the embedded costs of serving the Company's residential and small commercial service customers.

    - Will re-create the intra-class cross subsidies that existed within the Company's residential service rate class before the Commission approved a SFV rate design in the Company's last rate case.

    - Will cause more customers to overpay for gas service during colder than normal periods, when some customers are least able to afford higher gas bills, because of the volumetric delivery charges that will be re-established.

    - Will provide an inappropriate ratemaking foundation for the Company to offer energy efficiency and conservation programs, because of the disincentive the Company will have to promote such programs, which is caused by revenues and sales that are directly linked through the increased emphasis placed on a volumetrically-based rate structure.

Q7. Have you included any schedules or other attachments with your rebuttal testimony?

A. No.

II. COMMISSION'S PRIOR ADOPTION OF SFV RATE DESIGN FOR NATURAL GAS LDCS IN OHIO

Q8. Are you familiar with the rate design reflected in the Stipulation filed in this matter on January 4, 2019?

A. Yes. The Stipulation (as reflected in Joint Exhibit 4.0) continues the SFV rate design approved in VEDO's last base rate case for residential customers (Rates 310/311/315). *See* Case No. 07-1080-GA-AIR. The Stipulation also expands SFV rate design to General Service – Group 1 customers.

Q9. What is SFV rate design?

A. Under a SFV rate structure, rates are designed so that customers pay a flat monthly fee for the utility-related services provided by the gas or electric utility. For VEDO, this type of rate design provides for the inclusion of all fixed costs of gas delivery service incurred by the Company to serve its residential and small commercial service customers and the recovery of such costs through a single monthly charge. These customers will continue to pay on a volumetric basis for the gas commodity volumes used each month based on the prevailing commodity price of natural gas.

Q10. Are the parties opposing the Stipulation—OCC, OPAE, and ELPC—specifically opposing the use of SFV rate design?

A. Yes.

Q11. Has the Commission previously approved the use of SFV rate design for gas delivery rates?

A. Yes. As noted above, the Commission approved the use of SFV rate design in the Company's last base rate case for its residential class. VEDO witness Swiz, in his rebuttal testimony, identifies the Commission's other prior decisions in which the Commission approved SFV rate design for natural gas residential delivery rates for Duke Energy, Dominion East Ohio, and Columbia Gas of Ohio. I am familiar with these decisions

based on my active involvement in Columbia Gas of Ohio's last base rate case I cited earlier, in which I sponsored testimony on the utility's SFV rate design proposal.

Q12. Under the Stipulation, would there be any volumetric rate component for gas delivery service for VEDO's residential and small commercial service rate classes identified above?

A. No. The portion of VEDO's revenue requirement assigned to these respective rate classes would be recovered entirely through a fixed Monthly Charge. The Stipulation does not assign any portion of VEDO's revenue requirement for these respective rate classes to a volumetric rate component. As a result, there will continue to be no volumetric rate component for gas delivery service assessed to the customers in these rate classes.

Q13. Has any party to this proceeding disputed the amount of revenues allocated to these rate classes reflected in the Stipulation?

A. No. None of the parties opposing the Stipulation have disputed the Stipulation's allocation of revenues to these rate classes, which was guided by the results of VEDO's cost of service study (COSS). No party proposed any rate mitigation to limit the amount of the rate increase that would be recovered from the residential class.

Q14. From a ratemaking policy perspective, why do you consider it appropriate to recover 100% of the costs to deliver natural gas for these rate classes through a fixed monthly charge?

A. This type of ratemaking approach recognizes that because VEDO's costs of gas delivery service are fixed in nature, such costs should be recovered through a fixed monthly charge. It reflects the cost causation characteristics of gas delivery service and recognizes that the Company's incurred costs are relatively uniform, on average, across the residential class. Finally, this rate design follows the "matching principle" of costs and rates which is a cornerstone of utility ratemaking. Under the "matching principle," the utility's customers are charged based on the costs of producing the service they receive.

Q15. Does economic theory support the use of fixed rates for utilities like the Monthly Charge under a SFV rate design?

A. Yes. To understand the dynamic of fixed cost pricing for utility service, one must begin with the concept of economies of scale. Utilities exhibit significant economies of scale, whereby each additional unit of output costs less per unit as the total output of the utility increases. This means that pricing at some measure of marginal cost would not result in the utility recovering all its costs because the marginal cost will be below the utility's average historical (embedded) cost. In a perfectly competitive market, there are pressures for prices to equal the marginal costs of production. However, simply setting utility rates on marginal costs can result in utilities not recovering their full revenue requirements. As a result, economists have long recognized that regulated utilities must follow a different pricing paradigm. The theory of Ramsey Pricing was developed to address the recovery of fixed costs when prices are set at marginal cost for utilities with scale economies. Under Ramsey Pricing, the recovery of fixed costs above the level that marginal cost pricing would recover must come by increasing the least elastic infra-marginal price.[1] In this case, VEDO's Monthly Charge under its SFV rate design is the least elastic infra-marginal price. Indeed, economic theory directly supports SFV rate design. Since fixed costs do not impact marginal costs, the separate recovery of fixed costs is fully consistent with economic theory.

Q16. In its prior decisions, the Commission identified the benefits of a levelized residential SFV rate design. What benefits did the Commission identify in VEDO's last base rate case when it approved the transition to SFV rate design?

A. In its Opinion and Order in Case No. 07-1080-GA-AIR, the Commission (p. 11) found that both revenue decoupling and SFV rate design (1) removed any disincentive to the

[1] The least elastic infra-marginal price in this context refers to the portion of a utility's rate structure that has the most inelastic demand characteristics.

utility to promote conservation and energy efficiency and (2) addressed revenue and earnings stability by ensuring that the fixed costs of delivering gas would be recovered, regardless of consumption. The Commission, however, found that SFV rate design had additional specific benefits: (3) more stable customer bills throughout the year (p. 11); (4) easier than decoupling for customers to understand (p. 12); (5) better price signals to customers on avoided costs (p. 12); and (6) a more equitable allocation of the fixed costs of delivery service among customers, regardless of usage (p. 13).

Q17. Have the parties opposing the Stipulation—OCC, OPAE, and ELPC—directly addressed these benefits in their prefiled testimony?

A. No. The parties suggest that circumstances have changed such that the Commission should revisit and reverse its prior adoption of SFV rate design. But the parties, in my judgment, fail to address—or even acknowledge—the benefits previously identified by the Commission.

Q18. Please explain how SFV rate design produces more stable customer bills throughout the year.

A. Through the application of a fixed monthly charge, SFV rate design increases the average customer's bills in the summer and shoulder months, when customer bills are at their lowest levels, and decreases or moderates the increase in customer's bills in the winter months, when bills are at their highest levels. This result is in sharp contrast to a rate design that includes a volumetric rate component to recover a portion of the utility's cost of delivery service, which will cause customers' gas bills to be higher in the winter months (when gas usage is at its highest levels) and lower in the summer and shoulder months (when gas usage is at its lowest levels).

Q19. Please explain why SFV rate design is easier than revenue decoupling for customers to understand.

A. SFV rate design is a straightforward pricing approach that provides customers with the price of gas delivery service at the time service is utilized. In contrast, a rate tracker approach such as a revenue decoupling mechanism is more complicated and can create more customer confusion about the resulting bill calculations because of its required rate deferral process. More specifically, a revenue decoupling mechanism requires periodic, after-the-fact, rate adjustments, which will either increase or decrease customers' monthly gas bills on a lagged basis compared to the cost-based, levelized monthly bill amount for gas delivery service under SFV rate design. This mechanism also requires the specification of normal weather conditions for the utility since under a volumetrically-based rate design changes in weather create variability in customers' bills, which a revenue decoupling mechanism must also account for through its periodic rate adjustments to customers.

Q20. Please explain why SFV rate design provides better price signals to customers on avoided costs and their energy usage decisions.

A. Economic theory dictates that an appropriate price signal reflects short-run marginal costs (SRMC). SFV rate design properly recognizes that the SRMC of gas delivery service caused by an additional unit of gas is zero. In other words, the fixed costs of gas delivery service do not change with changes in gas usage. The fixed Monthly Charge with no volumetric rate component under SFV rate design reflects this desired cost and price relationship. In contrast, a rate design that recovers fixed costs volumetrically will signal customers to make inaccurate and inefficient energy usage and investment decisions because the volumetric rate design incorrectly signals a customer that a portion of the

utility's fixed costs of providing gas delivery service can be avoided by reducing annual gas usage.

Q21. Please explain why SFV rate design provides a more equitable allocation of the fixed costs of delivery service among customers, regardless of gas usage.

A. SFV rate design provides a more equitable allocation of the fixed costs of gas delivery service among customers, regardless of gas usage, because it properly recognizes that a utility's fixed costs should be recovered through the fixed component of the rate structure, and that a gas utility's costs of delivery service are fixed in nature. In addition, SFV rate design recognizes that a gas utility's costs of delivery service are relatively uniform, on average, across its residential and small commercial service customers because these customer groups are relatively homogeneous in terms of their gas demands and sizes of distribution facilities required to serve these customers.

Q22. Ten years have passed since the Commission's decision in VEDO's last rate case. Is it your opinion that the use of SFV rate design for gas delivery rates still offers the same benefits previously identified by the Commission?

A. Yes. For the reasons I stated above, I believe the use of SFV rate design will continue to achieve the same benefits previously identified by the Commission. The cost characteristics of VEDO's gas delivery service have not changed over the ten-year period since the Commission ordered SFV rate design. VEDO's gas delivery costs are fixed in nature and represent the totality of its revenue requirement. At the same time, the load characteristics of VEDO's residential customers have not changed materially over the ten-year period, nor has the way in which VEDO's gas distribution system is designed to accommodate customers' gas delivery capacity requirements. As such, it continues to be appropriate to recover VEDO's cost of gas delivery service from its residential service

customers through a flat monthly fee, and it is also appropriate for similar reasons to utilize a SFV rate design for its small commercial service customers.

Q23. In your opinion, are there additional benefits associated with the use of SFV rate design for gas delivery rates that the Commission's Opinion and Order in Case No. 07-1080-GA-AIR did not mention?

A. Yes. I believe using SFV rate design for the gas delivery rates of a utility will achieve the following additional benefits for customers and the utility:

- SFV rates protect customers least able to pay from higher winter gas bills.
- SFV rates will result in lower annual true-ups for customers who are on the utility's budget billing program.
- SFV rates simplify a utility's revenue forecasts and rate case adjustments.
- SFV rates can reduce rate case frequency for a utility.
- SFV rates can reduce the debate over the utility's definition of normal weather.

Q24. In VEDO's prior rate case, the Commission (p. 12) also noted that the biggest driver of the total bill was the price of the commodity. Should a present lower price of natural gas—or variations in that price over time— cause the Commission to unwind SFV rate design?

A. No. The significant decline in the commodity cost of gas since the time SFV rates were approved by the Commission is not a phenomenon that a utility's gas delivery rates should attempt to somehow compensate or offset. Commodity gas prices can certainly vary over time, but they should not influence the proper rate design to be implemented for gas delivery service. These two utility-related services (delivery and commodity purchase) for pricing purposes should be treated separately (i.e., unbundled) because their cost causation characteristics are very different. Thus, the manner in which these costs are recovered from customers should be different. So long as the change in a customer's gas bill caused by a change in gas usage continues to reflect SRMC, the customer will continue to receive an economically efficient price signal that will reflect the value and

utilization of scarce societal resources upon which rational energy efficiency and conservation decisions should be based. SFV rates for VEDO's gas delivery service will preserve this important relationship, irrespective of the price of the gas commodity.

Q25. In VEDO's prior rate case, the Commission (p. 13) also found no evidence of a correlation between low-income and low-usage customers. Has VEDO submitted evidence in this case on the usage of low-income customers?

A. Yes. VEDO witness Swiz is sponsoring a detailed analysis of the relationship between annual gas usage and annual income for VEDO's residential customers, which shows that its lowest income customers use more natural gas on an annual basis than the average residential customer. The analysis also shows that there is not a direct relationship between annual gas usage and annual income for VEDO's residential customers. These results are consistent with the results of a similar analysis conducted by VEDO in its last rate case that supported the Commission's adoption of SFV rate design.

Q26. Is an above average level of gas usage for low income customers supported by similar studies you have seen in other utility rate case proceedings that addressed rate design concepts like VEDO's SFV rate design?

A. Yes. In the 2008 rate case filed by Columbia Gas of Ohio, Inc. (Case No. 08-0072-GA-AIR), which I discussed earlier, the utility conducted a detailed analysis of the relationship between gas usage and the income levels of its residential customers by individual zip code within its service area. The analysis related the actual gas consumption from the utility's billing records for its residential customers to the household income characteristics collected from the most recent U.S Census, by individual zip code within the utility's service area. The analysis resulted in a "u-shaped' income-consumption relationship indicating that household income and gas usage was not directly related. Instead, the lowest income customers (with a median annual household income of approximately $20,000) consumed more gas than other higher

income groups, and more gas than the average residential customer in each of the two geographic segments of the utility's residential rate class. This low-income group in the "North of Columbus" and "Columbus and South" regions used approximately 16% and 8% more gas, respectively, compared to the annual gas usage of the utility's average residential customer in each region.

Q27. In your opinion, does the record in this proceeding support the continuation of SFV rate design, as reflected in the Stipulation?

A. Yes. I believe SFV rate design is the preferred pricing method for the Company's residential and small commercial service customers for several important reasons:

- SFV rates offer the most economically efficient alternative to volumetric rates.
- SFV rates eliminate the distortion of gas commodity prices, thus promoting more accurate commodity price signals to the customer, and hence provide greater economic efficiency.
- SFV rates result in rates that track embedded costs more accurately, thus eliminating intra-class subsidies and undue discrimination within the residential and small commercial service rate classes.
- SFV rates provide the opportunity to recover revenue during post rate case periods without the use of a deferral ratemaking mechanism.
- SFV rates provide customer bill stability.
- SFV rates represent a simple and easily understood rate.
- SFV rates avoid administrative and customer issues related to revenue decoupling mechanisms.
- SFV rates avoid the administrative burden on all parties associated with more complex ratemaking alternatives.
- SFV rates provide no incentive for sales growth or disincentive for conservation and efficiency.
- SFV rates represent the best ratemaking alternative to address revenue instability.
- SFV rates eliminate the debate over the definition of normal weather and indeed eliminate the weather normalization process for base rates.

Q28. In your opinion, if the Commission were to accept the volumetric rate design endorsed by the opponents to the Stipulation, what would be the result?

A. Very simply, acceptance by the Commission of a volumetric rate design for the pricing of gas delivery service would preclude many of the above-described benefits from being realized by VEDO's residential and small commercial customers. Most importantly, a volumetric rate design will create incorrect price signals for VEDO's customers, which will result in inefficient energy consumption decisions under which customers save money on their gas bills, but society saves nothing in terms of scarce resources because VEDO's gas delivery costs do not change (i.e., no avoided costs are realized). Moreover, a volumetric rate design will create bill instability for customers and will impact VEDO's residential customers most severely during the winter months, when bills are highest due to increased gas usage caused by colder weather. Finally, a volumetric rate design will move VEDO's gas delivery rates further from its costs of delivery service because the rate will effectively treat the recovery of a portion of VEDO's fixed costs as if they are variable in nature. This mistreatment of costs will cause an inequitable allocation of the fixed costs of delivery service among customers and create intra-class cross-subsidies in VEDO's residential and small commercial rate classes.

III. ADDITIONAL RESPONSES TO ELPC WITNESS NELSON, OCC WITNESS GONZALEZ, AND OPAE WITNESS RINEBOLT

Q29. Have you reviewed the prefiled testimonies of ELPC witness Nelson, OCC witness Gonzalez, and OPAE witness Rinebolt?

A. Yes.

Q30. What are their recommendations on the rate design for VEDO's base rates?

A. ELPC witness Nelson and OCC witness Gonzalez (as a secondary alternative) recommend that the Commission maintain the current residential customer charge

($18.37) and recover any base rate increases in a new volumetric rate component. As part of their proposed rate design, they recommend that the existing residential fixed charge for the Distribution Replacement Rider (DRR) of $9.25 be recovered in base rates through the new volumetric rate component. This rate design proposal essentially converts the existing DRR charge to a volumetric charge and significantly lowers the overall level of fixed charges currently on VEDO's residential delivery bill. OCC witness Gonzalez's primary proposal is to reduce the current fixed charge, which would further increase the amount of revenues collected through a new volumetric rate component. OPAE witness Rinebolt doesn't recommend a specific rate design but opposes the continuation of SFV design for residential delivery rates. OCC witness Gonzalez and OPAE witness Rinebolt also each recommend the adoption of a revenue decoupling mechanism. ELPC witness Nelson doesn't explicitly endorse the use of revenue decoupling but notes that the Commission could adopt such a proposal. OPAE witness Rinebolt and ELPC witness Nelson also oppose the extension of SFV design to small commercial delivery rates.

Q31. In your opinion, should the Commission adopt any of these rate design recommendations?

A. No.

Q32. Please summarize why the Commission should reject these rate design recommendations.

A. The rate design recommendations made by these witnesses violate basic economic theory and fail to satisfy fundamental regulatory principles that form the foundation for sound utility ratemaking. Specifically, inclusion of a volumetric rate component to recover a portion of VEDO's fixed costs of providing gas delivery service from its residential and small commercial service customers will create economically inefficient gas prices, send

distorted price signals to these customers, and move rates further away from the underlying cost of service. Further, adoption of a revenue decoupling mechanism is a suboptimal ratemaking approach to address similar issues to the ones that are best addressed by a SFV rate design. I will explain the deficiencies of each of these rate design alternatives later in my rebuttal testimony.

Q33. What policy reasons does Mr. Nelson generally offer for his opposition to SFV rate design?

A. In his Direct Testimony (pp. 3:3-12, 6:7-17), Mr. Nelson argues that SFV rate design leads to inequitable cost sharing between higher and lower use customers, conflicts with the state policy goals of conservation and energy efficiency, and negatively impacts low-income customers.

Q34. Do Mr. Gonzalez and Mr. Rinebolt offer similar policy rationales?

A. Yes. All three witnesses also generally argue or suggest that SFV rate design sends improper price signals to consumers and lessens the control that customers have over their gas bills.

Q35. Please address the claim that SFV rate design is not a fair or equitable way for VEDO to recover the costs of delivery service from the residential class.

A. I disagree with this claim for several reasons. First, SFV rate design properly recognizes the fixed cost nature of the gas delivery services provided by VEDO. These cost characteristics dictate that such costs should be recovered through the fixed portion of the rate structure, which is the Monthly Charge under a SFV rate design. Next, SFV rate design reflects the conclusion that the costs of delivery service for residential customers are relatively uniform, on average, across all customers and should be charged to these customers on an equal monthly basis. As I will explain later in my testimony, because there is less variation in the types and sizes of gas distribution facilities required to serve

these customers and there are economies of scale inherent in the design of a gas distribution system, these design and operating conditions justify this type of ratemaking treatment rather than to rely upon a volumetrically-based rate design approach.

Q36. Please address the claim that SFV rate design sends improper price signals to consumers and lessens the control that customers have over their bills.

A. This claim is incorrect based on the underlying economic concept that supports the principle that prices should be set based on the SRMC of the product or service being provided to the consumer. Under SFV rate design, SRMC is based on the commodity cost of gas, which is the correct price signal to customers to inform their decisions on whether to use more or less natural gas. If a gas utility's delivery service charges were based on a two-part rate with a volumetric rate component, it would cause the volumetric price signal to customers to increase above the SRMC (i.e., the sum of the commodity price of gas + the volumetric delivery charge). This would skew the price signal to customers and overstate the economic value to society of a customer consuming one less unit of natural gas. Investments the Company makes in its gas distribution infrastructure should be recovered from the customers who cause those investments to be made. Once such investments are made, the appropriate price signal is to recover those costs through a fixed monthly charge. In turn, customers should not receive a price signal that these types of investments, once completed, vary based on the amount of gas they consume. SFV rate design ensures customers will be provided with natural gas prices that signal their continued responsibility for these fixed costs, regardless of the amount of gas they consume – because the utility must incur these costs so that its gas distribution system is capable of satisfying customers' maximum capacity needs, whenever they occur.

Q37. Please address the claim that SFV rate design undermines the state policy goals of energy efficiency and conservation.

A. SFV rate design is fully supportive of the state's policy goals of energy efficiency and conservation because it provides customers with economically supportable and efficient price signals that recognize the SRMC of natural gas and the fixed costs of a gas utility's distribution infrastructure, as I described above. This will allow VEDO's customers to continue to make proper energy efficiency and conservation decisions based on sound economics.

Q38. Please address the claim that SFV rate design negatively impacts low-income customers.

A. This claim is incorrect based on the gas usage characteristics of VEDO's low-income customers. As I discussed earlier, VEDO has conducted a gas usage/income analysis that shows that the annual gas usage of its low-income customers is greater than the annual gas usage of the average residential customer. Therefore, under a SFV rate design, VEDO's low-income customers will benefit from relatively lower gas bills compared to their gas bills under a rate design that has a volumetric rate component, as specifically proposed by ELPC, OCC, and OPAE.

Q39. In his Direct Testimony (pp. 6:18-12:9), Mr. Nelson criticizes VEDO's and Staff's approach of recovering fixed costs through fixed charges as "extremely over-simplified." Mr. Rinebolt, in his Direct Testimony (p. 4:19) and Supplemental Direct Testimony (p. 8:16), also refers to SFV rate design as "simplistic" and "crude." What is your response?

A. I fundamentally disagree with these characterizations of SFV rate design for several important reasons. First, Mr. Nelson's claim that, "the concept that fixed costs should be recovered through fixed charges is an extremely over-simplified approach to rate design" ignores a fundamental tenant of utility ratemaking – that rates should reflect costs. In the first edition of James Bonbright's "Principles of Public Utility Rates," often referred to as

the quintessential guide to utility ratemaking and rate design principles, Bonbright titled the fourth chapter: "Cost of Service as the Basic Standard of Reasonableness." In that chapter, Bonbright states, "one standard of reasonable rates can fairly be said to outrank all others in the importance attached to it by experts and public opinion alike – the standard of cost of service."[2]

VEDO's SFV rate design in this proceeding has been designed with the explicit goal of continuing to minimize the intra-class subsidies that were present with the two-part rate design (which included a volumetric rate component) that existed before the Commission's adoption of a SFV rate design in early 2009. Movement towards rates that ensure recovery of fixed costs from those who cause those costs to be incurred through fixed monthly charges is the most effective way to meet this goal, as well as, satisfy Bonbright's most important standard in designing reasonable rates.

Mr. Rinebolt's claims that, "SFV rate design is a simplistic form of decoupling" and "SFV is a crude approach to decoupling" are shortsighted and ignore the reality that SFV rate design is the most straightforward and complete ratemaking solution to achieve cost-based rates, minimize intra-class cross subsidies, provide proper price signals to customers, and remove the disincentive for the utility to actively promote energy efficiency and conservation initiatives for its customers. From a cost causation perspective, it is desirable and appropriate to first "get the underlying rate right" if revenue decoupling is even to be considered as a ratemaking alternative. Under any rate design proposal that increases the volumetric rate component while decreasing the fixed rate component, all other things being equal, the periodic rate adjustments required under

[2] James C. Bonbright, Principles of Public Utility Rates, Columbia University Press, 1961, p. 67.

a revenue decoupling mechanism will be larger in magnitude. This occurs because the revenue decoupling mechanism adjustments must compensate, after-the-fact, for the over or under recovery of fixed costs caused by the volumetric component of the rate structure being applied to changing levels of gas usage. Under this alternative, customers will likely experience after-the-fact rate adjustments in their gas bills long after the gas was used that created the need for the rate adjustments. This outcome completely skews any price signals to which the customers could respond. Most importantly, SFV rate design addresses an issue that a revenue decoupling mechanism does not –intra-class cross subsidies.

Q40. In their Direct Testimonies, Messrs. Nelson (p.7:7-11) and Gonzalez (p. 15:7-13) claim the Company's use of a fixed charge to recover its fixed costs of delivery service is contrary to competitive industries that use volumetric pricing for the recovery of their costs. How do you respond to their claims?

A. Their claim is misplaced and should be ignored, as I describe below. It is true that there are businesses such as retail purchasing under which the customers typically pay no access fees at all and pay only for the services rendered or product received. Mr. Nelson's "gasoline" example is similar in that the owners of the transporting pipelines and other required infrastructure to get gasoline supplies to market recover their fixed costs from consumers through a "per unit charge."[3] In fact, virtually every capital-intensive industry is faced with a high percentage of fixed costs in the short-run. Prices for competitive products and services in certain of these industries are established on a volumetric basis, including those that were once regulated (e.g., airline travel and rail service).

[3] It should be recognized, however, that the only part of the gasoline market utilizing fully variable pricing are the retail outlets. The entire supply chain, which is comprised of hundreds of different operators and businesses, uses fixed price contracts for the production, refining, and transportation segments of the value chain.

These examples provide no guidance, however, for regulated pricing because of several fundamental economic differences between these types of businesses and a gas distribution utility. First, none of these businesses have an obligation to serve and are free to choose whether to serve a customer or not provide service. They are free to enter and exit the business at a moment's notice. Second, these businesses directly control the volume of production and may adjust that production consistent with market conditions to insure recovery of fixed costs. Third, these businesses may adjust the price in response to market conditions so that during times of high demand the earned return increases and falls during times of low demand. Whereas, utilities have limited upside potential and must file a rate case and wait to adjust revenues upward when demand falls, or costs increase. Even when costs fall, the utility is subject to regulatory review of earnings and the potential for lower rates. Fourth, these businesses have the right to dictate payment terms. Thus, a propane supplier might require payment at the time of delivery rather than bill the customer. In sum, all these differences make pricing strategies differ by type of service. Consider the airline industry and its pricing. Prices vary significantly from one passenger to the next, even on the same flight and for the same class of service. Utilities may not price discriminate in this way. Further, airlines may adjust to demand by cancelling flights, changing aircraft type and limiting access to service by overbooking. None of these options would be permitted for a utility trying to manage costs and revenues. Finally, in the competitive model, volumetric pricing based on marginal cost produces a full return of and on investment under competitive equilibrium conditions but would not do so for a regulated utility.

Q41. Do you agree with Mr. Nelson's "accounting" definition in his Direct Testimony (p. 7:12-18) of the fixed costs of delivering gas?

A. No. Mr. Rinebolt relies on a similar definition in his Direct Testimony (pp. 4:23-5:2) and Supplemental Direct Testimony (p. 10:16). This definition of fixed costs is overly narrow, very limiting, and provides no insights into the nature of a utility's cost of service components and how costs are incurred – which guides how costs should be recovered through rates. Mr. Nelson claims that the only fixed costs, "in accounting terms," for a gas utility like VEDO are interest and depreciation. The sole basis for his claim is a recent report prepared by the Regulatory Assistance Project (RAP) which states, "In accounting terms, the only truly 'fixed' costs are interest and depreciation. All other costs, including the shareholder return, associated income taxes, labor, and revenue-sensitive costs, are technically variable costs—they change from month to month and from year to year."[4] I should note that this RAP report includes a disclaimer which states, "this paper was prepared at the request of the Ohio Public Utilities Commission (Commission). It is meant as informational, and the views and opinions expressed herein do not necessarily represent the views of the Commission." If Mr. Nelson's borrowed definition of fixed costs had any degree of validity, all gas distribution utilities would have to weather normalize each cost component in their total revenue requirements because an adjustment to gas consumption in the test year from actual levels would, in turn, cause each cost component to change. In reality, a gas utility only weather normalizes its purchased cost of gas in a rate case (in recognition of its variable cost characteristics) to reflect the change in gas consumption in the test year from actual to weather normalized levels.

[4] Regulatory Assistance Project, Recommendations for Ohio's Power Forward Inquiry, February 2018, p. 48.

From a strict accounting standpoint, fixed and variable costs are usually defined in terms of how a total cost changes in relation to fluctuations in the quantity of some selected activity, over a relevant range for that activity. For a gas utility, the activity that should be used is the amount of natural gas that is consumed by customers. And the relevant range over which to evaluate that activity for rate design purposes is defined as either the utility's test year or the rate effective period (the first year in which a utility's regulatory approved rates are effective). Under this definition, VEDO's cost of gas delivery service should be defined as fixed, not variable as argued by Mr. Nelson, and treated as fixed for rate design purposes.

Q42. Do you agree with Mr. Nelson's statement in his Direct Testimony (p. 8:11-15) that grouping costs as fixed or variable is inappropriate when designing gas delivery rates?

A. No. Quite frankly, I am surprised by Mr. Nelson's statement considering that his testimony attempted to explain how fixed and variable costs should be defined for a utility within the context of setting gas distribution utility rates. In my view, the characterization of utility costs as either fixed or variable is a universally accepted costing and ratemaking concept in the utility industry at the FERC and at state regulatory commissions. In evaluating a utility's total revenue requirement for purposes of conducting a COSS, the defining cost characteristics of each demand, customer and commodity cost component are influenced by how such costs can change during the rate effective period with a change in output (i.e., design day demands, customers served and gas annual volumes). At the FERC, one of the key steps in designing interstate gas pipeline rates is to classify the functionalized costs of production, gathering, transmission and storage as either fixed or variable. As part of this ratemaking process, in my experience, the FERC views fixed costs as occurring regardless of whether a pipeline

transports any gas, while variable costs increase or decrease depending on the volume of gas transported.

Q43. In his Direct Testimony (p. 8:15-16), Mr. Nelson suggests that because demand related costs "are variable in the long-term" they are not fixed. Why is that not a proper assumption to make for rate design purposes in this proceeding?

A. This assumption is irrelevant for purposes of designing the rates of a gas distribution utility such as VEDO. Since the utility's total revenue requirement is based on embedded or historical costs, it relies upon a static test year – and not any long-run period (as defined by economists)[5] upon which Mr. Nelson's assumption appears to be based. In fact, Mr. Nelson readily acknowledges this test year concept in his Direct Testimony. He states, "It is important to keep in mind that rates are set in a static way – we base rates off a test year."[6] VEDO's COSS is based on embedded costs which equates to the total revenue requirement used in this rate case and is used to guide the design of VEDO's rates. The COSS is not based on any measure of long-run marginal or incremental costs (LRMC or LRIC) and it should not be within the context of how revenue requirements are determined in utility rate cases before the Commission. If we take Mr. Nelson's assumption that all fixed costs of the utility are variable in the long-term, it would follow that VEDO's gas delivery rates should be designed on a 100% volumetric basis – which is a non-sensical and infeasible outcome that completely ignores the fixed cost nature of a gas distribution utility, thereby skewing any price signals provided to customers.

[5] Economists define the "long-run" as the period during which a firm can increase, decrease or otherwise alter all factors of production without restriction – see Eugene F. Brigham and James L. Pappas, Managerial Economics, Second Edition, The Dryden Press, 1976, p. 252.
[6] Direct Testimony of Ron Nelson, p. 14, lines 1-2.

Q44. Mr. Nelson believes that the customer charge should only collect "customer-specific" costs, as stated in his Direct Testimony (p. 9:1-8). What is the problem with this approach?

A. Mr. Nelson's approach to include only "customer-specific" costs in a gas utility's monthly customer charge is fundamentally flawed and incapable of properly reflecting in rates the cost causation characteristics of a gas utility such as VEDO. His "customer-specific" cost approach to establishing a utility's monthly customer charge fails to recognize that there are costs in addition to just those related to the cost of "metering, billing and service line costs." This method violates utility accounting principles by excluding certain plant-related costs that also support the connection of customers to the utility's system (e.g., distribution mains) and a variety of other O&M and A&G expenses that must be accounted for on a "fully loaded cost basis." For example, meter reading activities require transportation and electronic devices to record meter readings and the associated computer hardware and software to electronically record the meter data into the utility's billing system. Yet, under Mr. Nelson's "customer-specific" cost approach, those costs would be excluded as customer-related costs based on the argument that such costs are not directly related to the customer. However, if such costs are not recognized as customer-related since they are not directly related to the customer cost function, then out of necessity they must be recognized as either demand or commodity related so that the total level of costs is equal to the utility's total cost of service. This approach skews the design of rates because it ignores the fact that there are plant and expense components that support the plant and expenses that are directly related to the customer cost function, and these costs also are fixed in nature. These support costs are also related to the customer function and, therefore, are appropriately treated as customer-related costs for rate design purposes. Mr. Nelson's "customer-specific" approach to setting a utility's

monthly customer charge is incorrect and biased because it treats many types of fixed, customer-related costs as if they are variable in nature – which allows Mr. Nelson to claim such costs should be recovered through the volumetric component of the rate structure.

Q45. Mr. Nelson objects to VEDO's recovery of demand related costs through the customer charge in his Direct Testimony (p. 9:9-12). Why is that an appropriate rate design?

A. A SFV rate design fairly and equitably assesses the fixed, demand-related costs of gas delivery service to residential customers because the unit capacity cost of serving each residential customer is relatively uniform, on average, recognizing the sizing of a gas utility's distribution facilities and the economies of scale in the design of its gas system.

Q46. Mr. Nelson suggests in his Direct Testimony (p. 9:9-12) that because each customer has a different peak demand, collecting demand related costs through the customer charge creates "an inequitable intraclass subsidy." Mr. Rinebolt makes similar inequitable claims in his direct (p. 6:1-9). Do you agree?

A. No. The most important consideration that Messrs. Nelson and Rinebolt either fail to recognize or are unwilling to acknowledge is that the cost of gas delivery service provided by a gas utility to its residential customers is influenced much more by the standard sizing of the gas distribution utility's infrastructure (i.e., meter, regulator, service line and main) to serve each residential customer than by the customer's actual peak day gas usage. It is the combination of the customer's connected gas loads <u>and</u> the standard size(s) of the gas distribution facilities used to serve the customer's design capacity requirements that cause a gas utility like VEDO to incur costs to provide gas delivery service to its customers. In short, while a customer's design capacity requirements may dictate a main size of 1½ inches, the utility likely will utilize its standard 2-inch diameter main rather than also having to maintain in inventory a 1½ inch

diameter main. Because there is a high degree of homogeneity in the standard sizes of distribution facilities used by a gas utility to serve the capacity needs of its residential customers, it follows that the costs of providing gas delivery service will be relatively uniform across the size range of residential customers.

Q47. Can you please explain in greater detail why a gas utility would standardize its installation practices and related sizing of gas distribution facilities for serving its residential customers and how that practice affects the cost of gas delivery service for these customers?

A. Yes. Gas distribution utilities such as VEDO standardize the gas distribution facilities required to connect a residential customer to the utility's existing gas system to achieve economies of scale in the purchasing of pipe, meters, regulators and the associated components (e.g., tapping tees, excess flow valves and service risers) and to design into the utility's gas system a sufficient amount of additional capacity to accommodate future increases in gas loads at customers' premises if, and when, a customer decides to expand its use of natural gas through the purchase of additional gas consuming appliances.[7] It is my understanding that VEDO's engineering and operations group standardized its customer installation process for residential customers years ago and determined it was appropriate to utilize a 1-inch service line, and its associated components, and a 250 meter (with a capacity of 250 cubic feet per hour or cfh)[8] as its standard gas installation configuration to provide gas service to its residential customers. VEDO also has established a 2-inch plastic main as the minimum size pipe it will utilize to serve

[7] As would be the case for the larger residential customer (the "first resident") in the hypothetical customer example presented by Mr. Nelson at page 10 of his Direct Testimony.

[8] In certain extreme cases (e.g., a very large home with all gas appliances and a pool heater), a larger size gas meter (425 cfh meter) may be necessary to serve this type of residential customer. However, the difference in cost is small, with a 250 cfh meter costing about $120 compared to a 425 cfh meter which costs about $200. Over the depreciable life of the meter, this difference in cost for ratemaking purposes would be minimal.

customers and installs predominantly 2-inch main in most of its residential developments. However, there are some situations where a larger size of main is used as determined by a load flow analysis of VEDO's existing and projected aggregate capacity requirements on a portion of its gas distribution system. This standardization process for customer installations also recognizes that the largest portion of the cost of connecting new residential customers to a gas utility's existing system is associated with the labor for installation, and not the material. In other words, the unit cost of installing a 1-inch service line compared to that of a ½-inch service line is basically the same (assuming the same installation conditions) because you will require in both cases the same size of labor crew, the same equipment and the same amount of time to complete the gas service installation.

Q48. Mr. Rinebolt, in his Direct Testimony (p. 9:1-10), expands his inequitable argument in opposition to SFV rate design to small commercial customers. What is your response?

A. I believe use of a SFV rate design is fair and equitable to VEDO's small commercial customers for the same reasons I provided above for its residential customers.

Q49. In his Direct Testimony (p. 10:1-15), Mr. Nelson describes two hypothetical residential customers, with potential different demands, who would pay the same fixed charge. He calls that result an "inequitable outcome." Do you agree?

A. No. It is a fair and equitable outcome for the reasons I provided above.

Q50. With his hypothetical, Mr. Nelson argues that customers with a higher peak demand more heavily use and benefit from the gas distribution network. Mr. Gonzalez, in his Direct Testimony (p. 15:14-19) and Supplemental Direct Testimony (p. 19:5-10), makes a similar argument that SFV rate design is "not particularly fair" to customers who use less of the distribution system. Do you agree with their opinions?

A. No. As I explained above, "use" of the gas utility's distribution system does not influence how the fixed costs of gas delivery service are incurred to serve different sized residential customers to satisfy their design hour capacity requirements.

Q51. Mr. Gonzalez, in his Direct Testimony (p. 15 n.10) and Supplemental Direct Testimony (p. 19 n.13) claims that customer density will affect the utility's cost of service. How do you respond to this claim?

A. I disagree with Mr. Gonzalez's conclusion from his example that it would cost less to serve a residential customer who lives in a small apartment with high density than it would to serve a customer who lives in a neighborhood with a larger home and large frontage in less densely populated areas. Mr. Gonzalez offers no evidence that a lower density means higher installation costs for the gas utility. In fact, density results in higher distribution-related costs for several reasons, including: more expensive maintenance because of the myriad of facilities (electric conduit, cable conduit, water lines, unused steam lines, and telephone conduit) that are buried near or co-located with gas mains; the rules and regulations applicable to service in urban areas typically impose extra costs on the utility for excavation (often requiring hand digging and removal of all materials) and monitoring of repairs; strict requirements related to backfill and paving and requirements that limit how and when work can be done to install, maintain, repair and replace distribution system components; the need for a traffic control plan, and additional safety-related requirements placed on operators of a natural gas distribution system. Finally, rural areas that are less densely populated may be the least costly to serve because of their

proximity to the interstate gas pipelines that supply natural gas to the gas utility through "city gates" and the lower installation and maintenance costs associated with distribution facilities located in rural and undeveloped areas. Thus, it is fair to conclude that Mr. Gonzalez's contention is not reflective of any of these considerations.

Q52. Does the Company have evidence that the unit cost of installing distribution mains is greater in geographic areas that have higher customer density?

A. Yes. At my request, the Company provided me with unit labor cost data from Vectren's asset management system for main extension and distribution expansion projects across its Ohio and Indiana gas utility systems in high density urban locations and in low density suburban or rural locations. This installation cost data demonstrates that the average labor cost of high density urban projects, measured in cost per foot of installed 2-inch plastic pipe, is approximately 63 percent higher than the unit labor cost for low density suburban projects.[9] This urban/suburban cost difference ranges between 54 and 64 percent higher for plastic pipe installations and between 86 and 121 percent higher for steel pipe installations depending on the specific size of pipe. This data shows that Mr. Gonzalez's presumption is incorrect that customers served in high density locations means lower costs compared to the costs to serve in low density locations.

Q53. Should the design of utility rates be structured to reflect variations in costs from the cost to serve the average customer within a relatively homogeneous rate class?

A. No. As I explained earlier in my testimony, utilities design their rates on the average cost to serve customers within a rate class, which is influenced by the standard facilities sizes the utility maintains in inventory based on the typical customer(s) in each rate class and the economies of scale of its gas distribution system. As a result, Mr. Gonzalez's

[9] High density urban projects are defined as projects that occur in highly condensed downtown areas with limited green space and low density suburban projects are defined as projects for new construction where the final grade has not been established (i.e., rough grade).

inference that a SFV rate design does not accommodate the above-described cost differences is of no value considering that no rate design, including a volumetrically-structured rate, should be structured to reflect variations in the actual costs to serve an individual customer from the costs to serve the average customer within a rate class. This is especially true in VEDO's residential rate class, in which these customers are relatively homogeneous as defined by the costs of the standard sizes of utility plant, equipment, and facilities used to provide gas delivery service to each customer in this class.

Q54. Mr. Gonzalez, in his Direct Testimony (pp. 14:12-15:6) and Supplemental Direct Testimony (p. 18:3-19), also argues that SFV rate design may cause customers to disconnect from the gas system entirely and/or switch to an alternative fuel source. Mr. Rinebolt seems to share a similar concern in his Supplemental Direct Testimony (p. 9:12-23). Should the Commission consider these possibilities when designing residential rates?

A. There is always the threat of certain utility customers deciding to switch from one energy source to another. More generally, very low usage customers of the types described by Mr. Gonzalez may be less economic to serve by a gas utility. This is the primary reason why gas utilities encourage customers who are located "on main" to consider adding new, energy efficient gas appliances to serve the customer's other energy requirements (e.g., space heating, water heating, cooking) since the incremental costs to the utility and its customers to serve these gas loads will be less.

Under the volumetric rate design approaches of Messrs. Gonzalez and Rinebolt, I am concerned that customers who are no longer economic to serve with natural gas would continue to be customers of the gas utility because they can avoid being charged the full fixed cost of gas delivery service – which would not be a desirable outcome for VEDO's other residential customers who without SFV would be subsidizing these customers through higher volumetric gas delivery rates.

Q55. Do higher use customers cause the utility to incur more delivery costs than lower use customers within the same class, as the opponents to the Stipulation suggest?

A. No. This incorrect conclusion is based on the flawed assumption that the unit cost to serve higher use residential customers is greater than the unit cost to serve lower use residential customers. For the customers served in VEDO's residential rate class, the basis for concluding this class is homogeneous is not tied only to a measure of customers' annual usage levels or peak demands. Instead, as I explained earlier, it is based upon the efficiency design and engineering standards used by VEDO which guide the choice of meter, regulator, service line, and main extension (as needed) to provide each customer with gas delivery service. The unit cost to serve a larger residential customer actually is somewhat less than the unit cost to serve a smaller residential customer because there is minimal variation in the types of facilities to serve these customers and the economies of scale inherent in the design of a gas distribution system. For example, the majority of VEDO's residential customers are served from either a 1-inch plastic service line or a 1 1/4-inch steel service line. Let us assume the installed historical cost of an average service line for a residential customer is approximately $1,250. The unit cost of the service line for a customer consuming 300 Ccf per year would be $4.17/Ccf while the unit cost for a larger customer consuming 1,200 Ccf per year would be $1.04/Ccf for the same $1,250 service. For these types of fixed distribution investments and related expenses, if a party in this proceeding makes the argument that certain of these costs should not be recovered in VEDO's Monthly Charge, then there would have to be a declining block rate structure used to reflect the differences in the unit costs of serving smaller residential customers (using a higher rate block charge) and larger residential

customers (using a lower rate block charge) ending up with virtually the same bill impacts as the more simpler SFV rate design.

Scale economies for a gas distribution utility also influence the cost to serve customers. As I explained in my Direct Testimony, economies of scale reflect the relationship between the installed cost of pipe by size and type, coupled with the increased capacity from pressure and pipe diameter. For example, doubling the size of the gas main more than doubles the available capacity of the main, at a cost for VEDO less than double the cost of the smaller sized main. For a lower pressure system, increasing pipe size from two-inch to four-inch allows almost six times the amount of gas to flow. These cost causative characteristics result in larger residential customers imposing lower unit costs of design day capacity on the gas utility's distribution system than smaller residential customers.

Q56. Should higher use customers pay more for delivery service than lower use customers?

A. No, for the reasons I just explained.

Q57. Is it feasible to separate out the actual costs to serve each member of the class?

A. No. This is an infeasible task because there are variations in the cost of service from one customer to the next. For example, there are many factors that cause the costs of an individual customer to be different from the costs of the average customer. These factors include, among other things, whether the customer has a long-side or short-side service line. Mains are typically located on one side of the street; thus, if two customers are located across the street from each other, one customer has a shorter service line than the other just because of the side of the street that the customer lives on.

In addition, as I described earlier in my testimony, distribution mains installed in suburban areas are typically less expensive to install than mains installed in urban areas where main is co-located with water, sewer, electric, and telephone lines. Mains are more expensive to install where the soil is rocky than where it is sandy. All these differences in costs are not directly reflected in utility rates because it would create far too many classes of service based on factors such as the side of the street you live on or the type and location of the main that serves the customer.

Mains costs also differ based on when the main was installed. Older main is more depreciated than newer main, yet we do not have rates set by vintage. Mains costs differ based on the front footage of the lots where the homes are located and even differ within the same residential development when lots are not uniform in size. The Company does not go down the street and measure each lot to determine which rate classification to use for each customer.

Absent having a unique rate for each customer to recognize all these different factors and exactly recover the actual costs of serving each customer, designing rates to recover the average costs assigned to a rate class is how utility regulators have addressed this issue. And the Company's residential gas delivery rate should be the same for all customers based on the average costs for the rate class where that class is shown to be homogeneous.

Q58. Is it feasible to calculate an individual residential customer's cost of service?

A. No. For the reasons I just explained, it would require approximately 295,000 separate computations, assuming the specific plant and expense data by customer was even available, to derive an individual cost of service amount for each of VEDO's residential customers.

Q59. Is it feasible to design a customized rate for an individual residential customer?

A. No. Without the specific cost data described above, it is infeasible to design a customized rate for an individual residential customer. That is why the concept of rate classes is used in utility ratemaking to group customers with similar load and cost characteristics (i.e., greater customer homogeneity) so that a rate design can be derived that is a reasonable representation of the average cost of serving all customers within the class.

Q60. Would recovering demand related gas delivery costs through a volumetric rate component be a "superior," i.e., fairer, approach for the residential class, as Mr. Nelson suggests in his Direct Testimony (pp. 11:9-12:9)?

A. No. Recovering VEDO's demand-related costs of delivery service through a volumetric rate component is a poor alternative to recovering these fixed costs on a fixed monthly basis because it will: (1) cause greater cross subsidies between low-use and high-use customers; (2) materially skew price signals to customers; and (3) move VEDO's gas delivery rates further away from the cost to serve its residential and small commercial customers.

Q61. Mr. Nelson, in his Direct Testimony (p. 8:16-19), suggests that recovering demand related costs in a volumetric rate would "reduce the cost to build the system over time." Mr. Rinebolt, in his Supplemental Direct Testimony (pp. 10:20-11:4), makes a similar suggestion that a volumetric design for delivery rates would result in a "smaller system." What is your response?

A. I disagree with Mr. Nelson's suggestion because I believe it is seriously flawed. He has assumed for purposes of his argument that the plant investments and related costs of VEDO's gas distribution system are completely variable over the long-run and, on that basis, he claims the Company's gas distribution system can be rebuilt and downsized (at a lower cost) to accommodate lower demands of customers caused by their energy efficiency and conservation actions. The reality is that a gas utility's distribution system evolves over time, and the rates that allow for the recovery of the fixed costs of the gas

system must be designed to reflect the average historical (embedded) costs upon which the utility's total revenue requirement is based over time. Customers come and go and annual gas usage can vary over time, but the connected gas loads of customers at the time they connect to the gas distribution system (which drives the customer's design hour gas capacity needs) and the design and engineering standards which govern the sizing of meters, regulators, service lines and mains have the greatest influence on how costs are incurred by the gas utility. At the same time, just because a customer can reduce its gas usage during the year through energy efficiency and conservation actions does not mean the customer's design hour capacity requirements will also decrease. It is far more likely that the customer's annual load factor will deteriorate because the customer's ongoing design capacity requirements will not change. Even if we assume for argument's sake that the customer's design hour capacity requirements will decrease with the customer's purchase of a more energy efficient gas furnace, the sizing and associated costs of the standard size meter, regulator and service line for residential customers will not change for this customer, and the upstream mains will not be downsized to try to match the reduced design hour capacity needs of that customer. And contrary to Mr. Rinebolt's claim, a gas distribution utility's "Design Day" is not a function of customer usage. As I just described, the design day, and design hour, capacity requirements for a residential customer are premised upon the connected gas loads.

Q62. In his Supplement Direct Testimony (p. 11:2-4), Mr. Rinebolt also argues suggests that higher fixed charges lead to a "larger" system and "higher costs for all." Do you agree?

A. No. Mr. Rinebolt's claim is simply incorrect. While those residential customers who use more gas than the average customer may cause the gas distribution system to be larger than it would otherwise, the higher gas usage does not translate into higher costs for all.

Due to the economies of scale inherent in the design and engineering of a gas distribution system, the unit cost of the pipe capacity for a larger diameter main that could be required to serve larger customers is less than the unit cost of capacity to serve smaller customers. Since rates are designed on a class average basis, VEDO's smaller residential customers will benefit from the economies of scale and lower unit costs caused by the larger residential customers.

Q63. In his Direct Testimony (p. 12:5-6), Mr. Nelson states that a lower customer charge "helps to achieve the state policy goals of energy efficiency and conservation." Why is this assertion a red herring argument?

A. It is a red herring argument simply because a lower customer charge for gas delivery service requires a corresponding increase in the volumetric rate component, which Mr. Nelson claims will decrease the amount of natural gas consumed based on the stronger price signal (i.e., from higher volumetric charges) provided to customers. In reality, though, the more the price of natural gas is raised above the SRMC (which for a gas distribution utility such as VEDO is the commodity price of gas), the more skewed the price signal becomes to customers because it is sending the message that the fixed (sunk) costs of VEDO's gas distribution infrastructure can be avoided, and that such costs are variable. If there is no benefit to society from a decrease in the amount of scarce societal resources being consumed by firms, then the value of energy efficiency and conservation is being overstated to consumers.

Q64. Conversely, Mr. Nelson argues in his Direct Testimony (p. 13:8-9) that SFV rate design "impede[s] progress towards achieving energy efficiency and conservation goals." Mr. Gonzalez, in his Direct Testimony (p. 12:4-6) and Supplemental Direct Testimony (p. 15:19-21), makes a similar claim that SFV rate design will lead to "less energy efficiency." Mr. Rinebolt also makes a similar claim in his direct (p. 8:13-14). Do you agree?

A. No. Based on the situation I described above, a SFV rate design provides the most economically efficient price signal to customers because it reflects the SRMC of gas. Therefore, the resulting level of energy efficiency and conservation initiatives pursued by customers will be supportive of the state's goals.

Q65. In his Direct Testimony (p. 13:10-11), Mr. Nelson's claim that a higher fixed charge in this case will "[extend] payback periods for energy efficiency and conservation investments." Mr. Gonzalez, in his Direct Testimony (p. 12:10-12) and supplemental direct (p. 15:7-9) makes a similar claim that SFV rate design "penalizes" customers who have made energy efficiency investments. Mr. Rinebolt also makes a similar claim in his Direct Testimony (pp. 6:15-7:8) and Supplemental Direct Testimony (pp. 7:17-8:7). What is your response to these arguments?

A. I disagree with these arguments for the simple reason that before the implementation of a SFV rate design, customers who decided to invest in energy efficiency and conservation measures were provided with a shorter than appropriate payback period for their energy-related investments. This occurred because the gas bill savings to the customer was overstated due to a portion of VEDO's fixed costs of gas delivery service being recovered through a volumetric rate component, which inappropriately reduced the customer's gas bills as gas usage declined.

Q66. In his Direct Testimony (p. 13:13-15), Mr. Nelson claims that "the natural gas system is built to meet peak demand, so incenting customers to consume more by recovering most costs through a fixed charge will increase the cost of the system and therefore increase rate base, and likely profit, for the utility." How do you respond to this claim?

A. I disagree with Mr. Nelson's claim for several reasons. First, customers will not be incented to use more gas because the volumetric charge assessed to residential customers

reflects the SRMC (based on the commodity price of gas) – which is the proper price signal for customers to make reasoned and economically efficient energy usage decisions. However, assume for the sake of argument that a customer uses more gas in the future based on Mr. Nelson's price elasticity of demand claim. That decision will increase gas usage during the year which likely will decrease the customer's annual load factor,[10] but it will not increase the cost of VEDO's gas distribution system since the customer's gas usage on a peak day will not be any greater than the level of gas capacity assumed by VEDO during a design hour based on the aggregate connected load of the gas consuming equipment at the customer's location. As a result, the increase in gas usage will not require VEDO to increase the amount of design day capacity to serve this customer's increased gas usage, and it will not cause an increase in VEDO's rate base and profits, as claimed by Mr. Nelson.

Q67. In his Direct Testimony (pp. 13:20-17:8), Mr. Nelson argues that SFV rate design increases consumption. Mr. Gonzalez, in his Direct Testimony (p. 11:15-17) and Supplemental Direct Testimony (p. 16:4-6) makes a similar claim that SFV rate design will "encourage[e] more natural gas consumption." Mr. Rinebolt also makes a similar claim in his Direct Testimony (p. 6:11). Do you agree with Mr. Nelson's analysis and their opinions?

A. No. Mr. Nelson's argument based on price elasticity of demand concepts is fundamentally flawed because he is assuming incorrectly that, in this rate case, customers will be charged for the first time under an SFV rate design compared to a more traditional rate structure with a low monthly charge and high volumetric charge. The problem with his argument is that customers' transition from a more traditional rate design (with a volumetric rate component) to an SFV rate design first occurred in the 2008-2009

[10] While energy efficiency and conservation programs for gas customers can be designed to reduce the energy and demand requirements of residential customers, in reality gas usage reductions far outpace demand reductions which results in a deterioration of the customer's load factor.

timeframe when the Commission approved SFV rate design for VEDO, Columbia Gas of Ohio, Duke Energy and Dominion Energy Ohio. In this case, because residential customers are already being charged for gas delivery service under a SFV rate design, there is no volumetric delivery charge that will be lowered by VEDO's proposed increase in its SFV Monthly Charge. The only change in the volumetric charges faced by customers will be caused by changes in VEDO's commodity cost of gas. Since Mr. Nelson believes that customers respond only to changes in the marginal cost of gas, there will be no increase in gas usage by residential customers because VEDO's continuation of its SFV rate design will not cause a lowering of customers' marginal cost of gas. His argument based on the price elasticity of demand is misplaced and has no value in evaluating the continued appropriateness of an SFV rate design for VEDO.

Q68. Since the 2008-2009 period when the Commission adopted SFV rate design for VEDO and the other gas utilities in Ohio, has the average use per customer increased for the Company's residential class?

A. No. In VEDO's last rate case, the average use per customer for its residential class was 806 Ccf while in VEDO's current rate case, the average use per customer has decreased by almost 10 percent to 733 Ccf under a SFV rate design for gas delivery service with significant declines in the commodity price of gas over the last ten years.

Q69. Please respond to Mr. Nelson's claim, in his Direct Testimony (p. 13:16-19), that lower natural gas prices have "[eroded]" the justification for SFV rate design in VEDO's service territory.

A. As I discussed earlier in my testimony, this claim is unfounded because the significant decline in the commodity cost of gas since the time SFV rates were approved by the Commission is not a phenomenon that a utility's gas delivery rates should attempt to somehow offset or compensate for. Commodity gas prices can certainly vary over time,

but they should not influence the proper rate design to be implemented for gas delivery service.

Q70. In his Supplemental Direct Testimony (p. 12:7-15), Mr. Nelson suggests that gas usage and gas prices are no longer the most influential price signals received by customers. Do you agree?

A. No. In this rate case, under VEDO's proposed continuation of an SFV rate design, gas usage and gas commodity prices will still have the greatest influence on the price signals received by residential customers when making gas usage decisions. That is because the only variable portion of a customer's gas bill will continue to be the commodity price of gas which has been the case since the implementation of SFV rates in 2009. The influence of gas usage on customers' gas consumption decisions will not change under VEDO's proposed SFV rate design because the same SFV rate design is currently in effect.

Q71. Mr. Nelson, in his Supplemental Direct Testimony (p. 13:8-15), also claims that continuing SFV design and increasing the fixed customer charge will give customers "less control over their bills." Mr. Gonzalez makes a similar claim in his Direct Testimony (p. 14:3-11) and Supplemental Direct Testimony (pp. 17:16-18:2). Mr. Rinebolt also makes the same claim in his direct (p. 8:20-21). Do you agree with their opinions?

A. No. As part of their claims on this issue, Messrs. Nelson, Gonzalez, and Rinebolt apparently fail to recognize that the degree of control that customers will have on their gas bills will not change, if SFV rate design is maintained, since the cost of the commodity is not a function of the rate design. The existing rate design for gas delivery service to residential customers does not have a volumetric rate component; the continuation of that rate design cannot lessen a customer's control of its gas bills compared to the control the customer has over its gas bills at present rates.

Q72. Mr. Nelson, in his Direct Testimony (pp. 17:9-20:2) and Supplemental Direct Testimony (pp. 5:7-6:12), argues that SFV rate design is inequitable to VEDO's low-income residents. Mr. Gonzalez, in his Direct Testimony (pp. 10:10-11:2) and Supplemental Direct Testimony (pp. 13:18-14:10), and Mr. Rinebolt, in his Direct Testimony (p. 5:12-23), make similar claims. Has VEDO analyzed the relationship between income and usage in its service territory?

A. Yes. As described earlier in my testimony, Mr. Swiz is sponsoring a detailed analysis of the relationship between annual gas usage and annual income for VEDO's residential customers, which shows that the lowest income customers in its service territory use more natural gas on an annual basis than the average residential customer.

Q73. Based on your review of VEDO's analysis, what conclusions have your drawn?

A. Contrary to the claims made by these witnesses, VEDO's low-income residential customers have benefitted from a SFV rate design for gas delivery service since 2009. This continuing benefit has occurred because their annual gas usage is greater than the annual gas usage for VEDO's average residential customer. This phenomenon causes low-income customers to experience a lower than average impact on their gas bills compared to under a two-part rate design with a volumetric rate component. VEDO's proposed continuation of SFV rate design for gas delivery service perpetuates that benefit, as compared to the volumetric rate design proposals from Messrs. Nelson, Gonzalez, and Rinebolt, which would cause low-income customers to experience a disproportionately higher increase in the gas delivery portion of their gas bills compared to the increase for the average residential customer.

Q74. Even if VEDO's analysis had shown that low-income customers, on average, were low-use customers, would that result have changed your opinion on the appropriateness of SFV rate design for the residential class?

A. No. The economic and conceptual appropriateness of a SFV rate design and the benefits that accrue to VEDO's residential customers support the continued use of this type of rate

design. As a means to mitigate the bill impacts to customers based on their income level, there are more direct and effective approaches than rate design to address this issue, including utility and public assistance programs that target the customers who are in greatest need of financial support to help reduce their cost of natural gas.

Q75. Mr. Gonzalez, in his Direct Testimony (pp. 16:1-17:15) and Supplemental Direct Testimony (pp. 20:1-21:14), advocates that the Commission should replace SFV rate design with revenue decoupling – a rate design that the Commission rejected in VEDO's last rate case. Mr. Rinebolt, in his Direct Testimony (pp. 9:12-11:13), also supports decoupling. Why should the Commission reject this alternative again?

A. As I explained earlier in my testimony, a rate tracker approach such as a revenue decoupling mechanism is more complicated and can create more customer confusion about the resulting bill calculations because of its required rate deferral process. Moreover, revenue decoupling is a suboptimal ratemaking approach to address similar issues to the ones that are best addressed by a SFV rate design. Revenue decoupling must rely upon after-the-fact rate adjustments to ensure the utility's level of revenues approved in its last rate case are realized in future periods, and that customers are not overcharged or undercharged for gas delivery service because of variations in their gas usage levels from the levels assumed in the utility's last rate case. Revenue decoupling can skew price signals to customers in conjunction with the volumetric rate design proposed by Messrs. Nelson, Gonzalez, and Rinebolt because the after-the fact rate adjustments under revenue decoupling cannot accurately track VEDO's underlying costs of gas delivery service. For example, if the revenue decoupling mechanism requires a future rate surcharge because customers' actual gas usage and VEDO's actual delivery service revenues are less than approved in this rate case, customers' bills in the subsequent period will increase irrespective of whether the gas usage of these customers during the subsequent period increases, decreases, or remains the same compared to the previous period that gave rise

to the needed rate adjustment under the revenue decoupling mechanism. Finally, the operation of a revenue decoupling mechanism can exacerbate any existing cross-subsidies in rate classes to which the mechanism applies, since the rate refunds or surcharges under the mechanism would be assessed to customers on a purely volumetric basis, while the underlying gas delivery rates would be structured to recover costs through fixed and volumetric charges under the rate design proposals of Messrs. Nelson, Gonzalez, and Rinebolt.

Q76. Do you agree with Mr. Gonzalez's claim, in his Direct Testimony (p. 13:4-16) and Supplemental Direct Testimony (pp. 16:16-17:10), that revenue decoupling provides less of an "extreme impact" than SFV rate design?

A. No. As a threshold matter, any impact on VEDO's residential customers moving from a two-part rate for gas delivery service (with a volumetric rate component) to a single Monthly Charge under a SFV rate design was a ratemaking change that occurred over ten years ago.

Mr. Gonzalez claims that a revenue decoupling mechanism, "without an increase to the customer charge is a less extreme approach because it represents a less dramatic shift in customer bills and its impact does not fall disproportionately on low usage low income and fixed income customers." He is incorrect in his claim, however, because the rate refunds and surcharges assessed to customers after-the-fact can be quite extreme in terms of magnitude depending on how deficient the underlying volumetrically-based rate design is in recovering the fixed costs of gas delivery service. These types of periodic rate adjustments under a revenue decoupling mechanism will cause bill instability for customers compared to the equal monthly bills for gas delivery service under a SFV rate design. Moreover, these periodic rate adjustments will reflect the difference between

actual and normal weather which is completely out of the control of the Company's customers.

Q77. Mr. Gonzalez, in his Direct Testimony (pp. 13:17-14:2) and Supplemental Direct Testimony (p. 17:11-15), argues that SFV rate design violates the principle of gradualism and causes rate shock for low usage customers. In your opinion, between the Stipulation's rate design and the opponents' proposals, which is more likely to cause greater adverse impacts?

A. For VEDO's residential customers, a two-part, volumetrically-based rate design will cause greater adverse impacts and wider variations in customers' bills in moving from VEDO's current SFV rate design. This will occur because VEDO's residential customers already are being charged for gas delivery service under a SFV rate design, so the rate increase approved by the Commission at the conclusion of this proceeding will result in much more moderate rate impacts to VEDO's residential customers, across all sizes of customers, if a SFV rate design is approved. VEDO witness Swiz has prepared an undated Schedule E-5 attached to his rebuttal testimony which shows the true impacts to each of the Company's rate schedules as a result of the stipulated rates in this proceeding. In contrast, under the volumetrically-based rate design advocated by the opposing parties, low usage customers will experience disproportionately lower percentage increases in rates, or rate decreases, while high usage customers will experience disproportionately higher percentage increases in rates. These more extreme bill impacts under a volumetric rate design are illustrated from the "OCC Volumetric" line in Graph 1 at page 12 of Mr. Gonzalez's Supplemental Direct Testimony.

Q78. In his Supplemental Direct Testimony (p. 2:20-21), Mr. Nelson argues that "circumstances have significantly changed," since the Commission's order in January 2009 adopting SFV for VEDO's residential delivery rates. Do you agree?

A. No. As pointed out earlier in my testimony, VEDO's low-income customers continue to use more gas on an annual basis than the average residential customer – which is the

same situation that was observed in VEDO's last rate case. Regarding the decline in the commodity price of gas that has occurred since the 2008-2009 period, I explained earlier in my testimony why this price decline, or any material variation in commodity gas prices, should not have a bearing on the way in which a gas utility's delivery service rates are designed.

Q79. Mr. Nelson, in his Supplemental Direct Testimony (p. 5:5-6), argues that the Commission needs to "continually examine rate designs to ensure achievement of public policy goals." Is it your testimony that the Commission should not revisit rate design decisions in subsequent rate cases?

A. No. I believe a utility regulatory commission should periodically examine the underlying basis for its ratemaking decisions, especially if transformational changes are occurring as we see today in the electric utility industry. As part of that process, it is important that the benefit of experience with a specific rate design approach be evaluated to understand if the objectives that gave rise to the original rate design are, in fact, still being achieved over time. And if there are changes in circumstances from the time when the rate design was approved by the regulator, those changes should be critically reviewed to determine if they could affect the operation of the rate design or reduce the value of the rate design to customers and the utility. Based on my review of VEDO's SFV rate design for gas delivery service, I believe this rate design will continue to achieve the public policy goals for which this rate design was intended when originally adopted by the Commission.

IV. CONCLUSION

Q80. Can you please summarize your position on VEDO's proposed continued use of a SFV rate design for gas delivery service to its residential customers and extension of that ratemaking approach for its small commercial customers?

A. Yes. I believe the Commission should approve VEDO's SFV rate design proposal because it will continue to provide important benefits to VEDO's residential customers

and extend those types of benefits to its small commercial customers. SFV rate design represents the most direct ratemaking solution to achieve those benefits compared to the adoption of a two-part rate design with a volumetric rate component, with or without the implementation of a revenue decoupling mechanism which attempts to compensate for the deficiencies inherent in the use of a volumetric charge to recover the fixed costs of gas delivery service.

Q81. Does this conclude your Rebuttal Testimony?

A. Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was served by electronic mail to the following persons on this 5th day of March, 2019:

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