MONTANA-DAKOTA UTILITIES CO.

Before the North Dakota Public Service Commission

Case No. PU-20-379

Rebuttal Testimony
of
Ronald J. Amen

February 12, 2021

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I. INTRODUCTION AND SUMMARY

Q. Please state your name and business address.

A. My name is Ronald J. Amen and my business address is 17806 NE 109th Court, Redmond, Washington 98052.

Q. On whose behalf are you appearing in this proceeding?

A. I am appearing on behalf of Montana-Dakota Utilities Co. ("Montana-Dakota" or the "Company").

Q. Have your provided previous testimony in Case No. PU-20-379?

A. Yes. I previously sponsored direct testimony in this proceeding.

Q. Did you sponsor any exhibits or schedules supporting your direct testimony?

A. I sponsored Statement K, Statement L, and the following exhibits:

- Exhibit No.____(RJA-1), Proposed Revenue Allocation
- Exhibit No.____(RJA-2), Rate 60 Residential Bill Comparison
- Exhibit No.____(RJA-3), Wahpeton Transition Phase 1 & 2 Rate Design
- Exhibit No.____(RJA-4), Rate 70 Firm General Service Bill Comparisons, and
- Exhibit No.____(RJA-5), Wahpeton Rate 63 Residential Bill Comparisons.

Q. Please briefly summarize the subject of your direct testimony and the topics covered therein.

A. My direct testimony presented Montana-Dakota's Cost of Service Study ("COSS") and discussed its results. I also presented the various rate design proposals filed by Montana-Dakota in this proceeding. My direct testimony consisted of the following sections:

- Theoretical Principles of Cost Allocation
- Montana-Dakota's COSS

- Principles of Sound Rate Design
- Determination of Proposed Class Revenues
- Montana-Dakota's Rate Design Proposals
- Customer Bill Impacts

Q. Please summarize the purpose of your rebuttal testimony.

A. I will rebut certain issues raised by the testimonies of AARP witness, Scott J. Rubin, and the Advocacy Staff of the North Dakota Public Service Commission witness, James A Heidell.

First, I will address the issues raised by both Mr. Rubin's proposed allocation of distribution mains, which is based on his zero-intercept analysis, as well as Mr. Heidell's conclusions regarding the Company's zero-intercept and minimum system analyses.

Second, I will discuss Mr. Rubin's Class Revenue Allocation and his proposed Residential Rate Design.

Third, I will comment on Mr. Heidell's recommendation for a throughput-based allocation factor for the distribution mains constructed under the Company's Distribution Integrity Management Program (DIMP) and System Safety and Integrity Program (SSIP). I will also respond to Mr. Heidell's concerns regarding the Company's proposal for a two-phase integration of the Wahpeton service area rates.

Finally, I will address Mr. Heidell's proposed 10% cap on the residential rate increase.

Q. Are you sponsoring any exhibits or attachments to your rebuttal testimony?

A. Yes. I am sponsoring the following exhibit, which was prepared by me or under my supervision and direction.

- Exhibit No.____(RJA-1R), Revised Proposed Revenue Allocation

II. USE OF ZERO-INTERCEPT ANALYSIS FOR DISTRIBUTION MAINS

A. Montana-Dakota's Presentation in Direct Testimony

Q. Please summarize the method by which a customer component of Montana-Dakota's investment in Distribution Mains was determined for classification purposes within the company's Cost of Service Study (COSS).

A. The method used by the Company to determine a customer cost component of distribution mains is a generally accepted technique for determining customer related costs. The two most commonly used methods for determining the customer cost component of distribution mains facilities consist of the following: (1) the zero-intercept approach and 2) the most commonly installed, minimum-sized unit of plant investment. For purposes of determining the customer component of distribution mains to be used in Montana-Dakota's COSS, both the zero-intercept method and the minimum system method were employed to test the reasonableness, by comparison, of the two approaches.

Q. Please summarize how the Company's Zero-Intercept Analysis was conducted?

A. Under the zero-intercept approach, a customer cost component is developed through regression analyses to determine the unit cost associated with a zero-inch diameter distribution main. The method regresses unit costs associated with the various sized distribution mains installed on the LDC's gas system against the size (diameter) of the various distribution mains installed. The zero-intercept method seeks to identify that portion of plant representing the smallest size pipe required

merely to connect any customer to the LDC's distribution system, regardless of the customer's peak or annual gas consumption.[1]

Q. Please summarize how the Company's Minimum System Analysis was conducted?

A. The most commonly installed, minimum-sized approach is intended to reflect the engineering considerations associated with installing distribution mains to serve gas customers. That is, the method utilizes actual installed investment units to determine the minimum distribution system rather than a statistical analysis based upon investment characteristics of the entire distribution system. The most commonly installed, minimum-sized distribution mains analysis focused on 2-inch plastic pipe. In the last twenty-five years,1994 through 2019, 3.7 million feet out of approximately 6.7 million total feet or 55% of distribution mains installed in Montana-Dakota's North Dakota service territory was 2-inch plastic pipe. The dominant pipe size for new distribution main installations by far is 2-inch plastic.[2]

Q. Please provide the respective results of the Zero-Intercept and Minimum System methods.

A. The zero intercept regression results, weighted by the footage for plastic and steel mains, of $5.01 per foot cost of the "zero inch" distribution main when applied to the Company's total footage of distribution mains results in an investment amount equivalent to approximately 25.9% of the total investment in distribution mains, on a current cost (year 2019) basis. For the purpose of comparison, the most commonly installed, minimum-sized distribution mains analysis focused on 2-inch plastic pipe, the dominant pipe size for new distribution main installations over the

[1] Amen Direct, 17:23 – 18:12.
[2] Ibid, 13-18.

last twenty-five years. The 2-inch plastic pipe analysis, adjusted downward to account for its load carrying capacity, yielded a minimum system result of 35.4%. When compared to the zero-intercept analysis results, the mid-point of the 10-percentage point band-width or 30% was selected for the customer component of distribution mains.[3]

B. Positions of the Parties

Q. Please summarize the position of the AARP?

A. AARP witness, Scott J. Rubin, criticizes the method employed in developing the Company's zero-intercept analysis. He relies on a description he compiled from the National Association of Regulatory Commissioners (NARUC) Electric Utility Cost Allocation Manual. Mr. Rubin states,

> "The manual explains that a zero-intercept analysis is to be conducted by calculating the "average installed book cost per foot" for each size of property (in the case of gas distribution mains, the diameter of the main), weighting the data by the number of feet of each size and material, then calculating a linear regression for each different type of material. The results are then weighted by material."[4]

Mr. Rubin claims that I did not follow this procedure, because the square of the diameter of the pipe by size was used, rather than the pipe diameter and a trended cost (in 2019 dollars) rather than the book cost. Mr. Rubin performed two analyses which he claims to have "corrected", one using trended costs and one using actual book cost and concluded from the results of these analyses that "a properly performed zero-intercept analysis shows that there is no customer-related cost."[5]

[3] Ibid, 20:17 – 21:15.
[4] Rubin Direct, 21:13 – 17.
[5] Ibid, 22:14 – 15.

Q. Please summarize the position of the Commission's Advocacy Staff.

A. Advocacy Staff witness, Mr. James Heidell, states that neither the zero-intercept analysis nor the minimum system analysis methods used by the Company to determine a customer cost component of distribution mains reflect the current system design practices. As support for Mr. Heidell's opinion, he states that the minimum system calculation is based on 55% of the miles of pipe consist of 2-inch plastic, whereas the extensive rebuild of the distribution system under the DIMP uses 2-inch plastic pipe for 75% of the miles of pipe installed. He further states that the zero-intercept analysis is also not a reflection of actual system construction.

C. Montana-Dakota's Rebuttal Position

Q. Please provide your assessment of Mr. Rubin's reliance on the excerpt that he provided from the NARUC Electric Cost Allocation Manual for his alternative zero-intercept analysis of Montana Dakota's gas distribution mains.

A. Since Mr. Rubin chose to rely on the NARUC manual for his critique of the Company's zero-intercept analysis, it would be instructive to review a complete description from the section of the manual titled "The Minimum-Intercept Method."

> "The minimum-intercept method seeks to identify that portion of plant related to a hypothetical no-load or zero-intercept situation. This requires considerably more data and calculation than the minimum-size method. In most instances, it is more accurate, although the differences may be relatively small. The technique is to relate installed cost to current carrying capacity or demand rating, create a curve for various sizes of the equipment involved, using regression techniques, and extend the curve to a no-load intercept.

The cost related to the zero-intercept is the customer component."[6] [emphasis added]

The "average installed book cost per foot" quoted by Mr. Rubin means that a fully loaded cost (e.g., including labor, equipment costs, surface restoration costs, and capitalized overheads) should be used in the analyses rather than just material cost (i.e., the pipe). It does not preclude the indexing of installed costs to ensure that all the vintage costs from years of plant account history are evaluated on a level cost comparative basis. Failure to do so assumes that the nature of the distribution system hasn't changed over time and the relationship between the costs of the material, labor and other construction costs haven't changed over time. Both of these assumptions are false. It has become a widely accepted practice to index plant costs such as gas distribution mains to enable just such an apples-to-apples cost comparison.

Q. Was the vintage year cost data for gas distribution mains in the Company's zero-intercept analysis adjusted using a relevant utility industry index?

A. Yes. The Handy-Whitman Index used in the Company's zero-intercept analysis is part of a well-established, authoritative set of industry indexes that are routinely applied in the utility industry. The Handy-Whitman Index calculates the cost trends for different types of utility construction. Separate indexes are published for the electric, gas and water industries by geographic region in the United States. These indexes are used by regulatory bodies, operating utilities, service companies, and valuation engineers, as well as insurance companies.

[6] *Electric Utility Cost Allocation Manual,* National Association of Regulatory Commissioners (1992), p. 92.

Q. Are there other authoritative sources on the topic of the zero-intercept analysis for the purpose of determining the customer component of utility distribution facilities?

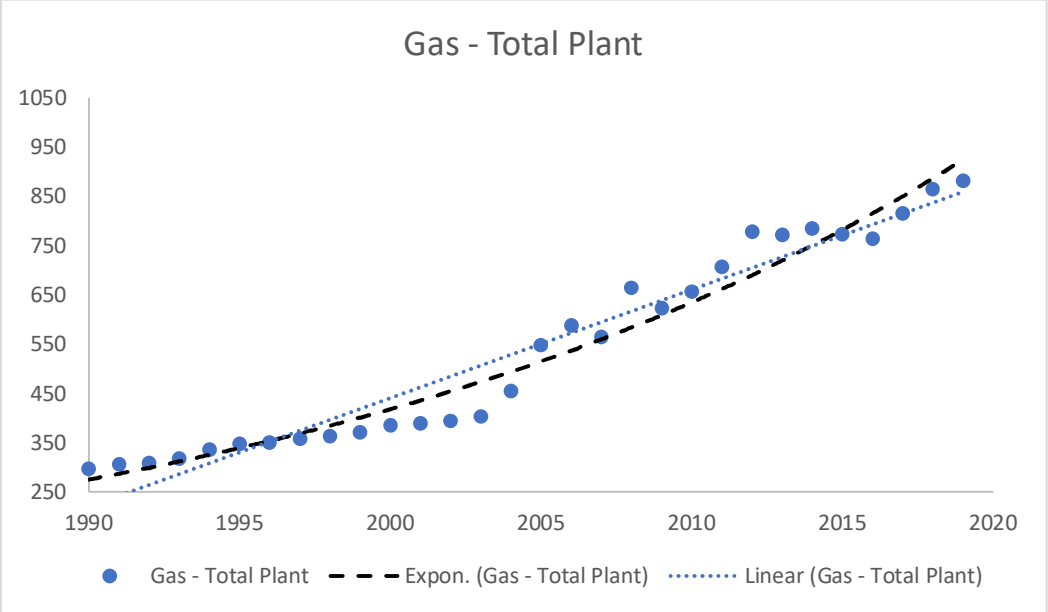
A. Yes. The Electric Utility Cost Allocation Manual, by John J. Doran, et. al., provides the following discussion of the zero-intercept method in Chapter VI B., "Two Methods for Determining Customer Components of Distribution Facilities:"

> "The minimum-intercept methods described in this chapter are based on average installed book cost of plant items. Because of inflation, which is generally reflected in larger size equipment, a rational minimum intercept cost may not be obtained where desired. However, the use of reproduction costs for each size will eliminate the distortion caused by inflation. A trend factor must then be used to reduce the minimum intercept from reproduction cost to average book value level. When data for its calculation can be obtained, the minimum-intercept method is recommended for use over the minimum-size method."[7] [emphasis added]

The use of the Handy-Whitman Index serves this purpose. **Figure 1** below demonstrates the exponential nature of growth in total gas plant costs over time, a better exponential fit than linear.

[7] Electric Utility Cost Allocation Manual, John L. Doran, Frederick M. Hoppe, Robert Koger, William W. Lindsay, published by the National Association of Regulatory Commissioners (1973), page 56. This text was later given attribution by the head of the task force assembled by the NARUC Staff Subcommittees on Electricity and Economics in February 1985, to compile revisions and additions to the original manual. Among the objectives included in the Preface of the manual published by NARUC in 1992 was the following: "The writing style should be non-judgmental; not advocating any one particular method but trying to include all currently used methods with pros and cons." [emphasis added]

Figure 1[8]



Q. Is the use of the square of pipe diameter (i.e., independent variable = x^2) in constructing the zero-intercept analysis a valid technique?

A. Yes. The square of pipe diameter in the regression equation of the zero-intercept analysis represents both material cost and the economies of scale embodied in the exponential increases in pipeline capacity provided by increases in pipe size. For example, a single 1,000 ft. segment of 4-inch gas pipeline provides more capacity than two side-by-side 1,000 ft. segments of 2-inch pipeline operating under the same maximum allowable operating pressure (MAOP). In fact, diameter squared is a key component of the engineering design formula for determining the maximum capacity for a gas pipeline of a particular size and material type.[9] The

[8] Source: S&P Global Market Intelligence, SNL Energy, Gas Utility Sector data, and Handy-Whitman.
[9] A simplified formula for distribution rated pipeline capacity per 1,000 feet of pipe equals the square of the pipe diameter multiplied by the MAOP, multiplied by an engineering constant factor. Other factors influencing the pipe size for a specific application include: pressure drop (loss factor), mean flow velocity, areas of constriction, (variable pressure), choking flows (valves), and area ratio density (metered connections).

capacity variable captures the economies of scale inherent in the ability of a pipeline of a particular size to serve the demand of the customers attached to that distribution pipeline.

Q. Does the NARUC Electric Utility Cost Allocation Manual dictate the use of only linear regression?

A. No. The underlined segment in the earlier quotation from the manual indicates the potential for a curvilinear trend in the cost of the various sizes and types of the plant equipment analyzed.

Q. Does the negative intercept in Mr. Rubin's zero-intercept analysis provide support for a zero-cost for the customer component of Montana Dakota's distribution mains?

A. No. Mr. Rubin's focus on a strictly linear relationship, original vintage year costs, and the other methodological details of his zero-intercept analysis only provides non-sensical results. It does not support a zero-cost of the customer-related cost of the Company's distribution mains. The very real costs of the total installed footage of distribution mains are influenced by the need to expand the distribution system grid to connect new customers to the system.

In fact, the construction cost components increase as larger diameter pipe are installed. Larger pipe diameters increase the width of the excavation, which requires larger excavation equipment. For example, a 2-inch plastic pipe (Montana-Dakota's minimum size distribution main installation) requires a trench that can be excavated with a wheeled trenching machine at a lower labor and equipment hourly cost. Larger diameter plastic and steel mains require a wider trench that calls for large backhoe excavators, with increasingly larger excavation buckets as pipe diameter increases, and often require side-boom tractors for

pipeline support above the ditch and lowering the larger, heavier pipe into the excavated ditch, all at a higher hourly cost. The skills required of the operators of these large excavators translates into higher labor rates. The 2-inch plastic, minimum size distribution pipe is manufactured and sold in large rolls that require few connection fusions per main extension. Typically, a three-man crew can install a 2-inch plastic main. Larger sized plastic and steel pipe are produced in "joints" of varying lengths. These require a larger number of joint fusions, and in the case of steel pipe, welded joints that require the skills of a certified pipeline welder, at a higher labor rate. Pipeline welders will typically be assisted by a pipe fitter who will prepare the pipe joint for welding, followed by coating the welded joint with a protective wrap, and attaching a cathodic protection anode. Excavations also require large amounts of backfill sand, the layer of material that protects the pipe from damage from foreign objects, in addition to surface restoration material, such as asphalt or concrete. If the size of the excavation is a certain percentage of the paved surface area, municipalities often require the utility to replace an entire concrete or asphalt panel beyond the actual width of the excavation. Over the course of my nineteen-year utility career, I spent a third of those years working with pipeline construction crews and field engineering personnel, including numerous construction site visits. Because my responsibilities included approval authority, I have reviewed countless construction work orders and "as-built" audits. Therefore, I can personally attest to the customer-related costs related to the construction of distribution mains. The fact that Mr. Rubin's zero-intercept analysis doesn't support this fact is a reflection of the flaws in his assumptions and methodology. Furthermore, Mr. Rubin's use of a flawed analysis to produce a zero-cost result in his calculation of an "average" customer component is a blatant example of a

results driven analysis meant to reduce the customer-related component of mains to shift cost away from the customers that his client represents.

Q. What is your assessment of Advocacy Staff witness Mr. Heidell's critique of the Company's zero-intercept and minimum system analyses?

A. Mr. Heidell's critique amounts to an uninformed opinion based on an apparent misunderstanding of cost causation as it relates to the design and construction of Montana Dakota's gas distribution mains. His criticism of the zero-intercept analysis centers on his equating the theoretical construct of the zero-inch main, in his words, "a pipe of no diameter," as a nonsensical system design and "not a reflection of actual system construction." As virtually any utility cost analyst, other than perhaps Mr. Heidell, or authoritative utility industry literary sources (some of which are referenced in this testimony) would agree, the zero-intercept analysis is not intended to be a reflection of engineering design criteria – no gas utility engineer would design, nor a utility construct, a pipeline of zero capacity. The zero-intercept analysis is a statistical method based on the assumption that there is a degree of demand serving capacity in even the smallest available unit size of a distribution plant component; for instance, gas pipelines. The minimum-intercept method seeks to identify the portion of the aggregate historical pipeline plant related to a hypothetical no-load or zero-intercept situation, as this represents the cost to extend access to gas service to customers and is therefore customer-related.

As discussed in my Direct Testimony, there are two widely accepted cost factors that influence the level of distribution mains facilities installed by a gas utility in expanding its gas distribution system. First, the size of the distribution main (i.e., the diameter of the main) is directly influenced by the sum of the peak period gas

demands placed on the utility's gas system by its customers. Secondly, the total installed footage of distribution mains is influenced by the need to expand the distribution system grid to either connect new customers to the system or to replace a segment of the system that serves existing customers (e.g., under a program such as Montana Dakota's DIMP initiative). Therefore, to recognize that these two cost factors influence the level of investment in distribution mains, it is appropriate to utilize an industry recognized method such as the zero-intercept analysis or alternatively, the minimum system method, to separate the aggregate historical investment in distribution mains into a demand and customer component for purposes of classification and subsequent allocation within the COSS based on the peak period demands and the number of customers served by the utility, respectively.

Q. Has the use of the zero-intercept and minimum system methods for determining the customer component of gas distribution mains received noteworthy support among state regulatory jurisdictions?

A. Yes. I have recently updated a study originally conducted in 2015 for all states that have had utility commission orders rendered in fully litigated gas general rate cases. The survey indicates that 41 state utility regulatory commissions (including the District of Columbia) rely upon the results of an embedded cost of service study for ratemaking purposes.[10] Of those states, there are 23 states that utilize a zero-intercept or some form of minimum system method to classify the costs of distribution mains between customer and demand for gas utilities. To my

[10] There are ten (10) states that require the filing of marginal or incremental cost of service studies, utilize a range of results from multiple cost of service studies, utilize a rate stabilization or formula rate mechanism, or utilize non-cost considerations to establish class revenue requirements and to set natural gas rates.

knowledge, none of the gas utilities in those states design and build a single segment of gas distribution mains with zero capacity.

III. CLASS REVENUE APPORTIONMENT

A. Montana-Dakota's Presentation in Direct Testimony

Q. Please summarize how the Company's proposed revenue increase was allocated to customer classes?

A. The Company's interclass revenue proposal consists of adjustments, in varying proportions, to the present revenue levels in all its customer classes. The Company's revenue increase proposal is designed to move each customer class's revenue to cost ratio towards parity while establishing a minimum level of increase to customer classes that are currently above parity.

The proposed revenue adjustment to the Residential Service (Rate Schedules 60) ensures their proposed rates will move class revenues closer to cost of service and will improve the class's revenue to cost ratio from 0.74 to 0.97. The proposed revenue increases to Small General Service (Rate Schedule 70), Large Firm General Service (Rate Schedule 70), and Minot AFB Delivery Service (Rate Schedule 64) classes results in a revenue-to-cost ratio for each of these classes at parity, or 1.00. The proposed revenue increases to the Small Interruptible Sales & Transportation Service class (Rate Schedules 71 and 81) and Large Interruptible Sales & Transportation Service (Rate Schedule 82 and 85) was set at a minimum adjustment of 25% of the system average increase to eligible (non-contracted) customers, resulting in these classes moving slightly higher than their current parity ratio levels relative to unity.

This revenue allocation approach resulted in reasonable movement of the Residential class revenue-to-cost ratio toward unity or 1.00, while providing

moderation of the revenue impact on this class by requiring some level of revenue increase responsibility from all customer classes for the Company's total proposed revenue requirement. From a class cost of service standpoint, this type of class movement, and modest reduction in the existing class rate subsidies, is desirable.

B. Position of AARP

Q. Please summarize the position of AARP?

A. Under Mr. Rubin's COSS, fewer costs would be allocated to the Residential class. This would lessen the amount by which the cost of service exceeds existing revenues from the class. He recommended limiting the increase to any customer class (except the Large Interruptible class) to no less than 50% of the system average increase (10.8% under MDU's proposed revenue requirement) and no more than 150% of the average (32.6% under the Company's proposed revenues).[11]

C. Montana-Dakota's Rebuttal Position

1. Impact of MDU's Revisions to Revenue Requirement

Q. Please summarize the revenue requirement revisions being recommended by the Company in rebuttal testimony?

A. The Company has reduced its revenue request from $8.97 million in the direct case to $7.71 million in rebuttal testimony. The details of the reduction to revenue requirement are presented in the rebuttal testimony of Company witness Ms. Vesey.

Q. Have you reviewed the impact of the revenue requirement changes and how it impacts the COSS and your revenue apportionment recommendation?

[11] Rubin Direct, 27:20 – 28:2.

A. Yes. Other than the overall reduction in total revenues, the impact of the changes to the class-by-class allocations in the COSS were minor. The resulting revenue-to-cost ratios under current rates are proportionally higher for each of the Company's customer classes and the relative relationships between the classes are essentially the same. I therefore recommend that the method of revenue apportionment to the customer classes recommended in my direct testimony should continue to be used for the revised revenue requirement.

Q. Have you prepared an exhibit to show the recommended revenue allocation under the revised revenue requirement?

A. Yes. In Exhibit___(RJA-1R) I have shown the current revenue-to-cost ratios under the Company's revised revenue requirement, my original revenue allocation based on the COSS from the Company's direct case, and my revised revenue apportionment recommendation based on the revised revenue requirement. As shown in Exhibit___(RJA-1R), the revenue apportionment I proposed in my direct testimony is still appropriate after taking the Company's revisions into account. I therefore continue to recommend that the Residential rate class receive an increase that results in a revenue-to-cost ratio of 0.97, the Small Firm, Large Firm and Air Force Delivery classes receive increases in amounts that bring their respective revenue-to-cost ratios to unity at 1.0, and that the Small Interruptible and Large Interruptible classes receive a minimum increase of 25% of the system average increase.

2. Response to AARP's Position

Q. In view of the adjustments by the Company to the revenue requirement discussed above, have you a response to Mr. Rubin's proposed revenue allocation to the respective customer classes?

A. Given the level of cost subsidies under current rates provided by the Small and Large Interruptible customer classes to the remaining customer classes, I find that Mr. Rubin's proposal to raise the level of revenue increase to these two Interruptible classes to 50% of the system average, which further widens the disparity in between revenue and cost, is excessive. I recommend increasing the revenues to these two classes no more than 25% of the system average, as I proposed in my direct testimony. My proposed revenue increase to the Residential class, under the Company's revised revenue requirement is 145% of the system average, which is less than Mr. Rubin's proposed upper limit.

IV. RESIDENTIAL RATE DESIGN

A. Montana-Dakota's Presentation in Direct Testimony

Q. Please summarize how the Company's residential class rate design proposal?

A. Montana-Dakota has proposed to adjust the monthly Basic Service Charges to better reflect the underlying costs of providing basic customer service for its customers. The Residential Rate Schedules do not contain a Distribution Delivery Charge. A Basic Service Charge that better reflects the level of customer related costs will result in a customer's annual bill more accurately reflecting the non-gas revenue amounts approved by the Commission in this rate case, while customers will recognize the results of their energy conservation efforts in the amount they pay for the gas commodity in their monthly bills. A Basic Service Charge provides increased bill stability for customers and increased revenue stability for the Company. The Basic Service Charge under Residential Rate 60 is proposed at $0.8919 per day which reflects an average monthly charge of $27.11, an increase of approximately $6.26 per month from the currently effective charge.

B. Position of AARP

Q. Please summarize the position of AARP for the Company's Residential rate design?

A. It is Mr. Rubin's opinion that the Company's proposed residential rate design is not consistent with the results of its COSS, does not reflect a fair allocation of costs among residential customers with different demand and consumption characteristics, and does nothing to encourage the efficient use of natural gas.

Q. What is Mr. Rubin's Residential rate design proposal?

A. Mr. Rubin recommends that the Residential Basic Service Charge should not be increased. He states that under the Company's COSS, the existing Basic Service Charge fully recovers all customer-related costs. Under Mr. Rubin's COSS, the existing Basic Service Charge collects more than $3.00 per month in excess of the total customer-related costs. He proposes that any rate increase allocated to the Residential class should be collected solely through a usage based volumetric charge.[12]

C. Montana-Dakota's Rebuttal Position

Q. In view of the Residential Basic Service Charge proposed by the Company, have you offered any further analysis that would evaluate the magnitude of increases to which individual customers will be exposed?

A. Yes. As discussed in my direct testimony, this can generally be assessed by analyzing how a change in rates impacts a customer's total bill, rather than the individual rate components, and is best analyzed by looking at the sum total of the customer's bills over a twelve-month period. The analysis should look at the

[12] Ibid, 33:8 – 13.

amount of change in dollars paid instead of merely focusing on percentage increases. This is because the percentage increase in a smaller bill appears relatively high.

Q. Have you performed the analysis you recommend for the Company's Residential Basic Service Charge proposal?

A. Yes. My direct testimony addressed the impact that an increase from the current Residential Basic Service Charge to the Company's proposed $0.8919 per day Basic Service Charge, would have on bills paid by Residential customers and Residential low-income customers over a twelve-month period. Residential and Residential low-income customers would all see an annual increase of $60.00 to $80.00, an average monthly increase between $5.00 and $6.67. Comparing the annual bill frequencies of low-income customers with those of the general population of residential customers, the low-income customer group have annual usage profiles very similar to those of the larger Residential class. This information addresses a not uncommon perception of low-income customers, which is that they tend to be low-use customers as well. The analysis shows this perception not to be true.

Q. What is the composition of the Residential Rate 60 Basic Service Charge of $.8919 per day or an average monthly charge of $27.11.

A. The Residential Rate 60 Basic Service Charge is composed of $7.12 per customer, per month of fixed demand-related costs, and $20.48 per month of customer-related costs, for a total monthly equivalent of $27.60. Under the Company's revised revenue requirement, Residential Rate 60 equivalent Basic Service Charge would be composed of $20.02 per month of customer-related costs and

$6.91 per customer, per month of demand-related costs, for a total monthly equivalent of $26.93.

V. THROUGHPUT ALLOCATION FACTOR FOR DISTRIBUTION MAINS

A. Montana-Dakota's Presentation in Direct Testimony

Q. Please summarize the Company's classification and allocation of distribution mains.

A. The Company classified 30% of its investment in distribution mains as customer related and 70% of the investment as demand related. The customer related portion of the distribution mains investment was then allocated based on the number of customers on Montana-Dakota's system. As discussed extensively in my direct testimony, and again in Section II. C. of my rebuttal testimony, the demand related investment was allocated to the customer classes based on their respective contribution to peak day demand under system design weather conditions, in other words, on a "design day" basis. None of the Company's distribution main investments were classified as commodity, or throughput, related because distribution mains investments are simply not a function of, nor do the underlying cost components vary with, throughput. Instead, they are a function of the number of customers on an LDC system and the design day demand of those customers.

B. Position of Advocacy Staff

Q. Please summarize the position of the Advocacy Staff?

A. Advocacy Staff witness, Hr. Heidell, concludes from recent and expected investments by the Company to enhance safety and reliability of the distribution system that a large driver of the proposed rate increase is the Company's substantial capital investment in replacing gas mains as part of the DIMP and

SSIP. In the instance of the pipeline replacements for safety, Mr. Heidell opines that, "it appears that the decision to install 4-inch PE [plastic pipe] was in part due to the number of customers on the line versus peak demand."[13] He also concludes that the costs related to the DIMP program were not necessitated by the need to meet customer peak demands, citing a reduction in the projected design day peak demand allocation factors in the current rate case from the level in the prior Montana-Dakota rate case.[14] Based on this conclusion, he then recommends that the Company apply a projected throughput allocation factor for the distribution mains investments that are related to safety, instead of including these investments as 30% customer related and 70% demand related and allocating the investment costs based on number of distribution customers and design day, respectively.[15]

C. Montana-Dakota's Rebuttal Position

Q. Please summarize the various factors that influence Montana Dakota's major capital projects.

A. Montana Dakota witness, Mr. Patrick Darras, provides a detailed discussion of the major capital projects in his Direct Testimony. The following is an excerpt:

> "The bulk of Montana-Dakota's major capital projects are pipeline replacement projects that have been identified for safety reasons and to reduce risk on Montana-Dakota's system, and system reinforcements or system expansions that have been identified as needed to ensure system reliability and to accommodate growth on the Company's system. A reinforcement is an upgrade to existing infrastructure or new system additions, which increases system

[13] Heidell Direct, 8:194 – 195.
[14] Ibid, 9:201 – 206.
[15] Ibid, 10:209 – 212.

capacity, reliability, and safety. An expansion is a new system addition to accommodate an increase in demand. Collectively, these are known as distribution system enhancements. Distribution system enhancements do not reduce demand, nor do they create additional supply. Instead, enhancements can increase the overall capacity of a distribution pipeline system while utilizing existing gate station supply points. The two broad categories of distribution enhancement solutions are pipelines and regulators." [emphasis added]

Q. Is Mr. Heidell's reliance on the reduction in the Company's projected design day demand in the current cost of service study a valid rationale for concluding that the costs related to the DIMP program were not necessitated by the need to meet customer peak demands?

A. No. Pipeline capacity conditions on any specific pipeline segment that is evaluated for replacement are a key consideration in determining the size of the replacement pipeline, whether necessary to resolve a current lack of adequate capacity on the pipeline segment targeted for replacement, due to growth in customer demand on that segment, or to improve the overall reliability of the contiguous pipeline system to meet the demands of the customers served by that system under peak weather conditions. The design criteria used to engineer and construct a replacement pipeline segment are no different than those used when extending distribution mains beyond the current reach of the distribution grid to serve the peak demands of new customers.

Q. Does a reduction in the projected system design day demand allocation factors used the Company's COSS dictate that decisions regarding pipeline replacement should not consider the collective connected maximum loads of customers on the pipeline segment to be replaced?

A. No. The projected system design day used for COSS purposes is a weighted average of the peak day average temperatures throughout the entire Montana Dakota service territory in North Dakota, experienced over a rolling thirty-year historical period. It will therefore change from time to time. This should not and does not relieve the Company of its responsibility to adhere to its pipeline design criteria when replacing a specific segment of its distribution pipeline network and thereby disregard the peak demand requirements of the customers connected to that pipeline segment.

Q. Mr. Heidell cites the following statement, "The Company also stated that when considering safety related projects, the cost per customer as well as the number of customers served is not a consideration on whether a safety related project will be pursued."[16] He relies on this statement, without attribution to the source or context, as rationale for his throughput allocation recommendation for safety related pipeline investment. Do you accept this reasoning?

A. No. Mr. Heidell is confusing the factors that determine the need to replace a specific segment of pipeline for safety reasons, with one of the two key cost factors underlying the actual design and construction of the replacement pipeline; that is, that portion of the construction cost related to extending the pipeline to reach all of the customers previously connected to the pipeline segment to be replaced. Mr. Darras discusses the safety related considerations that determine the need to replace a pipeline;

> "The System Safety and Integrity Program (SSIP) continues to prioritize replacement of early vintage plastic pipelines prone to

[16] Ibid, 10:216 – 218.

> poor manufacturing, industry documented Aldyl-A plastic defects, unknown attributes, missing data, mechanical fittings, inside gas meters, and non-reported third-party damages."[17]

Mr. Darras also discusses the types of projects performed to address safety-related concerns:

> "Pipeline replacement is typically the most viable option to remediate risks associated with material, joint, weld, corrosion, natural forces, and/or equipment. If Montana-Dakota determines that replacement is an appropriate action to reduce the risk, the Company establishes a replacement project."[18]

The risk factors discussed by Mr. Darras that determine the need to prioritize replacement of certain high risk pipeline segments are separate and distinguishable from the engineering design criteria used to build the replacement pipeline. Mr. Heidell's recommendation to allocate safety related investments volumetrically, based on a projected throughput, has no relationship to either the risk factors that lead to the need for replacement of a pipeline segment or the cost causation characteristics of the design and construction of the replacement pipeline.

Q. You provided a quotation from Mr. Heidell earlier in Section V. B. of your rebuttal testimony where he states "that the decision to install 4-inch PE [plastic pipe] was in part due to the number of customers on the line versus peak demand." What is your response to this statement?

A. My response is two-fold. First, Mr. Heidell fails to recognize that the replacement pipe size (diameter) is selected based on the peak demand imposed on the system by the number and types of customers connected; and second, his statement

[17] Darras Direct, 5:11 – 16.
[18] Ibid, 5:19 – 23.

conflicts with his proposed volumetric allocation of the safety related pipeline investments under the DIMP and SSIP programs. One would conclude from that statement that a customer-based allocation would be recommended. However, a purely customer-based allocation method would not serve Mr. Heidell's fairly transparent purpose in choosing an unsupported volumetric-based throughput allocation of the replacement pipeline investments; that is, shift cost responsibility from smaller, low load-factor customers (i.e., high peak demand relative to low annual usage) to larger, high load-factor customers (i.e., low peak demand relative to high annual usage), to the benefit of his client's constituents.

VI. PHASE-IN OF WAHPETON RATES

A. Montana-Dakota's Presentation in Direct Testimony

Q. Please summarize the Company's proposal for a two-phase integration of the Wahpeton service area rates?

A. In Phase 1 of the integration, Wahpeton Residential Service (new Montana-Dakota Rate Schedule 63) and Firm General Service (new Montana-Dakota Rate Schedule 73) customers will be converted from a monthly Basic Service Charge of $3.50 to a proposed daily Basic Service Charge of $0.25, an average monthly increase of $4.10. The Distribution Delivery Service multi-block rate structure for Rate Schedules 63 and 73 will be converted to a single block rate of $1.028 per Dk. In Phase 2 of the integration, the proposed daily Basic Service Charges applicable to Wahpeton Residential Service (new Montana-Dakota Rate Schedule 63) will increase to $0.333 per day, an average monthly increase of $2.52.

The average monthly increase for a typical Wahpeton Residential customer using 80 Dk per year under the Company's proposed Phase 1 rate design is $4.10 or 10.45%. The Phase 2 proposal is revenue neutral for the average Residential

customer using 80 dk. The monthly impacts a typical Wahpeton Residential customer using 80 Dk per year under the Company's proposed Phase 2 rate design ranges from -$3.75 in the coldest month to $2.19 in the warmest months. However, the average monthly impact (annual total) is negligible.

B. Position of Advocacy Staff

Q. Please summarize the position of Advocacy Staff?

A. Advocacy Staff witness, Mr. Heidell raised two areas of concern related to the Company's rate phase-in proposal for Wahpeton. His first concern is the potential for customer confusion regarding the bill change. The second concern is the bill impacts for customers.

Q. What was Mr. Heidell's recommendation to address his stated concerns?

A. First, Mr. Heidell recommends the Company implement a feedback process to understand the clarity of the bill messages as well as implement a staff training program to ensure Company personnel are well-versed in the phase-in process mechanics. Second, while he was supportive of moving the customers to higher customer charges to cover their share of fixed costs, he recommends that the Phase II change not be implemented prior to the next rate case, given the historical frequency that Montana Dakota has come before the Commission for increases in general rates.

C. Montana-Dakota's Rebuttal Position

Q. What is the Company's response to Mr. Heidell's concerns?

A. Montana-Dakota witness, Ms. Bosch, will provide the Company's response to the concerns raised by Mr. Heidell.

VII. TEN PERCENT CAP ON RESIDENTIAL INCREASE

A. Montana-Dakota's Presentation in Direct Testimony

Q. Please summarize the Company's proposed Residential class rate increase?

A. As discussed earlier in my rebuttal testimony, for the Residential Service class, the revenue adjustment ensures their proposed rates will move class revenues closer to the COSS for the class. The proposed revenue increase to the residential class will improve the class' revenue to cost ratio from 0.74 to 0.97.

Q. What is the resulting revenue increase to the Residential class based on the Company's proposed revenue apportionment.

A. The revenue increase responsibility apportioned to the Residential class results in a 12.52% revenue increase.

B. Position of Advocacy Staff

Q. Please summarize the position of Advocacy Staff?

A. Mr. Heidell recommends that the average rate increase for the residential class should be 10%. Mr. Heidell asserts that the rate increase for the residential class should be held to two times the average rate increase subject to the 10% cap. Further, Mr. Heidell claims that the Company's proposed rate increase will create rate shock for small volume users.

C. Montana-Dakota's Rebuttal Position

Q. Do you agree that the Company's 12.5% revenue increase is unreasonable as compared to Mr. Heidell's preferred 10% rate increase cap??

A. No. The 10% threshold appears arbitrary on its surface, and Mr. Heidell confirms this by further stating that his recommendation is not a hard and fast rule that should be carried to future rate cases, and apparently attributes his recommendation to the financial stress created by the COVID pandemic. I also note that the residential revenue increase has been revised to 11% based on the

Company's revised revenue requirement and my recommended class revenue apportionment.

Q. Do you accept Mr. Heidell's assertion that the Company's proposed increase to the Basic Service Charge results in "rate shock" for a subset of low-use residential customers?

A. No. In my experience, the term "rate shock" in the utility industry has been a convenient phrase to use as rationale for opposing large over-all utility revenue increases. Its use is often controversial and rarely defined in terms of numerical boundaries. Within the context of cost allocation and rate design, some would argue that strict adherence to cost causation in setting class revenue responsibility can result in significant rate differences for many customers, causing adverse and disruptive impacts on customers; and therefore, rate shock. It would not be in the best interest of Montana-Dakota to propose changes to its current rates that would cause such adverse and disruptive impacts on its customers. The recommended residential increase to the Basic Service Charge under the Company's revised revenue requirement results in $5.54 per month for a customer who uses no gas. While Mr. Heidell doesn't offer a definition of rate shock, in terms of real dollars, there is no connotation in which an increase of $5.54 to a monthly bill can be considered rate shock.

VIII. CONCLUDING REMARKS

Q. Please summarize the findings and conclusions in your rebuttal testimony.

A. My rebuttal findings and conclusions are summarized below:

Zero-Intercept and Minimum System Analysis

Mr. Rubin's focus on a strictly linear relationship, original vintage year costs, and the other methodological details of his zero-intercept analysis only provides non-

sensical results. It does not support a zero-cost of the customer-related cost of the Company's distribution mains. The very real costs of the total installed footage of distribution mains are influenced by the need to expand the distribution system grid to connect new customers to the system. Mr. Rubin's use of a flawed analysis to produce a zero-cost result in his calculation of an "average" customer component is a blatant example of a results driven analysis meant to reduce the customer-related component of mains to shift cost away from the customers that his client represents.

Second, Mr. Heidell's critique of the zero-intercept analysis amounts to an uninformed opinion based on an apparent misunderstanding of cost causation as it relates to the design and construction of Montana Dakota's gas distribution mains. His criticism of the zero-intercept analysis centers on his equating the theoretical construct of the zero-inch main, in his words, "a pipe of no diameter," as a nonsensical system design and "not a reflection of actual system construction." Any utility cost analyst or authoritative utility industry literary source would agree that the zero-intercept analysis is not intended to be a reflection of engineering design criteria – no gas utility engineer would design, nor a utility construct, a pipeline of zero capacity. The zero-intercept analysis is a statistical method based on the assumption that there is a degree of demand serving capacity in even the smallest available unit size of a distribution plant component; for instance, gas pipelines. The minimum-intercept method identifies the portion of the aggregate historical pipeline plant related to a hypothetical no-load or zero-intercept situation, as this represents the cost to extend access to gas service to customers and is therefore customer-related.

Class Allocation of Revenue Increase

Given the level of cost subsidies under current rates provided by the Small and Large Interruptible customer classes to the remaining customer classes, I find that Mr. Rubin's proposal to raise the level of revenue increase to these two Interruptible classes to 50% of the system average, which further widens the disparity in between revenue and cost, is excessive. I recommend increasing the revenues to these two classes no more than 25% of the system average, as I proposed in my direct testimony. My proposed revenue increase to the Residential class, under the Company's revised revenue requirement is 145% of the system average, which is less than Mr. Rubin's proposed upper limit.

Residential Rate Design

Mr. Rubin's opinion that the Company's proposed residential rate design is not consistent with the results of its cost-of-service study, does not reflect a fair allocation of costs among residential customers with different demand and consumption characteristics, and does nothing to encourage the efficient use of natural gas. The Company's Basic Service Charge better reflects the level of fixed customer and demand related costs and will result in a customer's annual bill more accurately reflecting the non-gas revenue amounts approved by the Commission in this rate case. Customers will recognize the results of their energy conservation efforts in the amount they pay for the gas commodity in their monthly bills. A Basic Service Charge provides increased bill stability for customers and increased revenue stability for the Company. The Basic Service Charge under Residential Rate 60 is proposed at $0.8919 per day which reflects an average monthly charge of $27.11, an increase of approximately $6.26 per month from the currently effective charge.

Throughput Allocator for DIMP and SSIP Main Investment

Mr. Heidell confuses the factors that determine the need to replace a specific segment of pipeline for safety reasons, with one of the two key cost factors underlying the actual design and construction of the replacement pipeline; that is, that portion of the construction cost related to extending the pipeline to reach all of the customers previously connected to the pipeline segment to be replaced. Mr. Heidell's fairly transparent purpose in choosing an unsupported volumetric-based throughput allocation of the replacement pipeline investments; that is, shift cost responsibility from smaller, low load-factor customers (i.e., high peak demand relative to low annual usage) to larger, high load-factor customers (i.e., low peak demand relative to high annual usage), to the benefit of his client's constituents.

Ten Percent Cap on Residential Rate Increase

The 10% maximum rate increase threshold recommended by Mr. Heidell appears arbitrary on its surface, and he confirms this by further stating that his recommendation is not a hard and fast rule that should be carried to future rate cases, and apparently attributes his recommendation to the financial stress created by the COVID pandemic. I also note that the residential revenue increase has been revised to 11% based on the Company's revised revenue requirement and my recommended class revenue apportionment.

Q. Does this conclude your rebuttal testimony?

A. Yes.

MONTANA-DAKOTA UTILITIES CO.
GAS UTILITY - NORTH DAKOTA

Revised Proposed Revenue Allocation

	Total North Dakota	Total Residential	Total Small Firm General	Total Large Firm General	Total Air Force Delivery	Total Small Interruptible	Total Large Interruptible	Total MAFB Distribution
Revenue to Cost Ratio Under Current Rates	0.84	0.76	0.87	0.96	0.80	1.01	1.71	2.14
Original Proposed Revenue to Cost Ratio								
minimum 25% of system average increase (to eligible customers 1/)						5.57%	5.57%	
Revenue Increase (as filed in Direct Case)	8,972,424	7,344,027	823,541	643,396	29,291	97,070	35,099	0
Total revenue at 25% system average minimum	50,857,794	31,668,705	5,340,964	9,590,977	139,664	1,839,877	1,821,607	456,000
Percent Increase	21.42%	30.19%	18.23%	7.19%	26.54%	5.57%	1.96%	0.00%
Parity Ratio	1.00	0.97	1.00	1.00	1.00	1.04	1.71	2.09
Revised Revenue Apportionment Recommendation								
minimum 25% of system average increase (to eligible customers 1/)						4.79%	4.79%	
Revenue Increase - Revised	7,709,952	6,499,032	687,833	381,188	28,327	83,412	30,161	0
Total revenue at 25% system average minimum	49,595,323	30,823,710	5,205,256	9,328,769	138,700	1,826,219	1,816,669	456,000
Percent Increase	18.41%	26.72%	15.23%	4.26%	25.66%	4.79%	1.69%	0.00%
Parity Ratio	1.00	0.97	1.00	1.00	1.00	1.05	1.74	2.14

1/ "eligible customers" excludes contract rate customers