BEFORE THE PUBLIC SERVICE COMMISSION OF WYOMING

IN THE MATTER OF THE APPLICATION OF DOMINION ENERGY WYOMING TO INCREASE DISTRIBUTION RATES AND CHARGES AND MAKE TARIFF MODIFICATIONS	Docket No. 30010-187-GR-19

DIRECT TESTIMONY OF DAVID C. LANDWARD

FOR DOMINION ENERGY WYOMING

November 1, 2019

DEW Exhibit 5.0

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is David C. Landward. My business address is 333 South State Street, Salt Lake City, Utah.

Q. By whom are you employed and what is your position?

A. I am employed by Dominion Energy Services, Inc. as a Regulatory Consultant. My work for Questar Gas Company dba Dominion Energy Wyoming ("Dominion Energy", "DEW" or "Company") involves analyzing and forecasting customer growth, gas demand, and Company revenues; the design of rates to recover non-gas costs; and general data analysis associated with regulatory proceedings.

Q. Attached to your written testimony are DEW Exhibits 5.01 through 5.07. Were these prepared by you or under your direction?

A. Yes.

Q. What are your qualifications to testify in this proceeding?

A. I have listed my qualifications in DEW Exhibit 5.01.

Q. What is the purpose of your testimony in this Docket?

A. I discuss (1) the Company's rate design proposal; (2) the proposed allowed General Service (GS) revenue under the Conservation Enabling Tariff; and (3) the proposed update to the time period used to calculate normal heating degree days for weather-normalization of GS customer usage.

II. RATE DESIGN

Q. Please summarize your testimony regarding the development of the Company's rate design proposals.

A. My testimony addresses the modifications proposed to the rates charged to the core and non-core customer classes. I also explain the general method and tools employed in the design of the proposed rates and why the Company's desired rate structure is an efficient, fair and reasonable mechanism to recover costs from customer classes that exhibit diversity in usage.

Rate Design Method

Q. Will you please explain the steps followed to determine the rates proposed in this case?

A. The first step undertaken was to separate the cost of service ("COS") elements into functional classes. These elements include O&M expenses, depreciation, taxes, and return on rate base. There are three cost classes to which an element may be assigned:

1. **Customer Costs:** These are costs that are primarily determined by the number of customers served.
2. **Demand Costs:** These costs are connected with meeting the Design-Peak Day demand of firm sales customers.
3. **Throughput Costs:** These costs are not directly attributable to meeting Design-Peak Day demand or to general customer service; rather, they are miscellaneous or ancillary costs that can vary with the level of regular customer demand.

Once the cost classification was completed, rates were designed to recover those costs in an efficient and equitable manner that avoids undesirable subsidies between rate classes (inter-class) and among customers within a class (intra-class). To this end, the Company has proposed a rate structure that combines a volumetric rate and a fixed basic service fee for all rate classes. The rate structure of the interruptible transportation service ("IT") class includes two additional components: an administrative fee and a per-unit charge on the daily contract limit ("DCL") set forth in each customer's contract.

The Company has determined that this proposed rate structure meets important objectives in rate design, namely: fairness and stability. This assessment was done with the aid of rate design tool called a cost curve.

Q. What is a Cost Curve?

A. A cost curve is a rate design tool that is useful in the engineering of rate structures that more efficiently recover costs of service from a class of customers varying in usage level. It is used to illustrate the relationship between two key variables in rate design: (1) the cost to serve per dekatherm (Dth) of consumption, and (2) the total of dekatherms (Dth) consumed. In this case, total Dth is an input variable, and the cost per Dth is the output variable.

Q. What is known about the relationship between unit cost and total Dth?

A. The relationship between these two variables is decreasing in nature, i.e. as total Dth increases, cost per Dth decreases. However, the rate at which it decreases is not fixed. In fact, the rate slows as total Dth increase. This type of relationship is referred to as non-linear.

A common mathematical function used to represent a non-linear relationship such as this is called the power function. The power function is expressed in equation form as:

$$y = \alpha x^{\beta}$$

It is this mathematical representation that the Company uses to model unit cost across the range of observed usage. In this case, y represents the annual cost per Dth, and x represents the total annual usage in Dth; α and β are constant values that control the position and the rate of curvature.

Q. Is this declining-unit-cost behavior unique to the Company's cost of service?

A. No. The declining unit cost across a wide range of output is not an anomaly; it is an economic characteristic of regulated utilities in general[1]. And it is an important characteristic to consider when designing rates for a class using average cost pricing.

Q. How is a cost curve developed?

A. The customer cost category is first analyzed with respect to average annual usage across the sales rate classes. A per-customer average of customer costs is calculated from the sales rate class data. It is weighted by each rate class's annual usage. This weighted customer cost average is then used to estimate an average monthly cost per unit of usage, measured in Dth, for each of over 200 individual monthly usage possibilities. These usage possibilities range from 1 Dth to over 20,000 Dth. The result is called a customer cost curve. It is a set of monthly customer costs per Dth, each paired with a monthly usage level.

The cost curve data can then be plotted on a line graph to visualize the evolution of the unit customer cost along an increasing Dth range. At this point, the customer cost curve is general to all classes of firm sales customers. The Company's derivation of the curve is shown in the *Cost Curves (Core)* tab in DEW Exhibit 3.09.

After the general cost curve has been established, it is then customized to each sales rate schedule by incorporating the average throughput and demand costs. The total throughput and demand costs of a class are each divided by the total annual Dth within the class. This provides average throughput and demand costs per Dth for the class as a whole. Each of these per-Dth averages are then added to every point in the set of per Dth customer costs used to develop the general cost curve. The result is a complete cost curve for the rate class.

Q. What do the cost curve plots produced for the GS and FS sales classes reveal about the unit cost of service?

1 Nicholson, Snyder, *Microeconomic Theory, Basic Principles and Extensions, 10th Edition,* p 510, South-Western, 2008

A. DEW Exhibit 5.02 shows the plots of the cost curves of the GS and FS rate classes. In both cases it is clear that as average usage increases the average per-unit cost decreases. It means that the average cost to serve customers within a class is not fixed; it changes with the level of consumption.

Q. What is the role of the cost curve in the rate design process?

A. The cost curve plot becomes a useful visual aid in the design of a rate structure that accounts for a changing unit cost and that minimizes intra-class subsidy. It can be thought of as a path that a rate structure must follow to efficiently and fairly recover costs incurred by a class of customers with wide variation in annual usage.

A proposed rate is applied to each monthly Dth level within the cost curve usage range to calculate revenue collected solely from usage. Any fixed charges, such as basic service fees, are added to the volumetric revenue at each usage point. Each result is then divided by the associated monthly Dth to derive the total revenue per Dth. A plot of the set of revenue per Dth points is superimposed over the plot of the complete cost curve to visually assess how closely the average rate follows the unit cost path as the level of usage changes.

Q. How are the cost and revenue curves used together to identify and minimize intra-class subsidies?

A. When the two curves intersect, the rate most efficiently recovers the cost at the usage level where the intersection occurs. When the revenue curve runs above the cost curve, customers at that usage level are, on average, paying above the average cost to serve. Similarly, customers using gas at a level where the revenue curve runs below the cost curve are paying below the average cost.

Because the full class cost of service is being distributed among all customers in the class, customers paying above the average cost are subsidizing customers paying below the average cost. A rate structure that minimizes gaps between the revenue curve and cost curve, either above or below, has the effect of minimizing over- and under-payment of

the average unit cost. The derivation and plotting of these two curves becomes a visual check on the efficiency of a proposed rate structure.

Q. What general rate structure has the Company determined will efficiently recover the cost of service?

A. The Company has determined that a segmented volumetric rate that declines with increasing usage blocks, coupled with a graduated basic service fee based upon meter size, efficiently recovers service costs at the rate class level with minimal intra-class subsidy.

Q. Has this rate structure been used as the foundation for the proposed rates in this case?

A. Yes.

Q. Has the Company used this proposed rate structure before?

A. Yes. This structure has been the foundation for the Company's rate design for many years.

Basic Service Fee

Q. Is the Company proposing any changes to the Basic Service Fees (BSF)?

A. No. The Company has reviewed the costs the fees are designed to recover and has determined that the current fees remain sufficient.

Summary of Rates and Fees to Collect the Required Revenue by Rate Schedule

Q. Have you calculated rates to recover the revenue requirement determined by the Company in this case?

A. Yes. A summary of the proposed rates is shown in DEW Exhibit 5.03, pages 1 through 4.

Q. Please explain how rates for the GS class were derived.

A. DEW Exhibit 5.03 page 1, columns C through D, lines 1 through 3, calculates the volumetric revenue with current rates from a forecast of 2019 usage. Column E, line 3, shows the result. In the same columns, lines 4 through 11, the revenue associated with current basic service fees is calculated. Column E line 12 is the total revenue collected at current rates and fees. Lines 4 through 11 of columns F through H calculate the portion of required revenue collected through basic service fees. Again, the Company has not proposed a change to those fees in this case. The remaining portion is collected through volumetric charges calculated on lines 1 through 3, columns F through H. The final revenue requirement to be collected from the GS class has been reduced by an allocated portion of other revenues (column H, line 13). The total revenue collected by the GS rates is shown on column H, line 14.

Q. Please explain how rates for the FS class are calculated.

A. The rates for the FS class are calculated in a similar manner to the GS class and are shown on DEW Exhibit 5.03 page 2, lines 1 through 12.

Q. How are NGV rates calculated?

A. The NGV rates are also displayed on DEW Exhibit 5.03 page 2, on lines 13 through 17. Columns F through H derive a new rate by dividing the revenue requirement of the class by the annual usage. In columns C through E, revenue is calculated at the current rate.

Q. How are the rates calculated for non-core customers?

A. The volumetric rates for non-core customers are modified through a percentage increase to the total revenue of the core customer classes (DEW Exhibit 4.06, column B, line 54). The rate design for the IS class is included on DEW Exhibit 5.03 page 3, lines 1 through 9. Columns C through E calculate volumetric and basic service fee revenue with current rates. Columns F through H calculate revenue with proposed rates and basic service fees.

The IT class rates are calculated in a similar manner. In addition to the volumetric rates, a demand charge and administrative charge are applied to the IT customer bill. The charge, shown on line 15 of DEW Exhibit 5.03 page 3, is increased from its current level using

the percentage increase to the core customer revenue (DEW Exhibit 4.06, column B, line 54). No adjustment to the administrative fee has bee proposed in this case.

The IC rate class includes only special interruptible transportation contracts that do not change under a general rate case proceeding.

Q. Have you calculated the annual bill for a typical GS customer based on the Company's proposed revenue requirement, COS study and rate design?

A. Yes. DEW Exhibit 5.04 shows the monthly bill amounts for the typical customer using current rates and the proposed rates. Column F, row 14 shows that the typical GS customer using 90 Dth per year would realize an annual increase of 13.1%, or $96.32.

Conservation Enabling Tariff (CET) Calculation

Q. The Conservation Enabling Tariff (CET) requires that the annual revenue per GS customer be calculated. Have you prepared a calculation of the allowed annual revenue and the monthly spread of the annual revenue per customer to be used in conjunction with the CET?

A. Yes. DEW Exhibit 5.05 shows the calculation of the allowed annual and monthly GS revenue per customer. Column A, line 13 contains the total revenue requirement assigned to the GS class. This total can be found in the Rate Design Summary (DEW Exhibit 5.03 page 1, column H, line 14). Using the volumetric and basic service fees proposed in this case, revenue based upon forecasted customer totals and usage levels is calculated for each month of the test year. Each month's revenue is divided by the number of customers to derive the allowed revenue per customer. The sum of the allowed revenue for all 12 months of the year is the annual revenue per customer, a total of $546.93.

Adjustment to Normal Heating Degree Days

Q. Is the Company proposing an adjustment to the normal heating degree days (NHDD) used for weather-normalization of GS customer usage?

A. Yes. The Company currently bases weather-normalization of GS customer usage on NHDD calculated from the 10-year period ending December 31, 2010. The Company is proposing that the 10-year period be adjusted to end December 31, 2018 and that NHDD be re-calculated within that time period.

Q. When would the NHDD time period adjustment be effective?

A. The proposed adjustment would take effect at the same time rates approved by the Commission through this proceeding become effective.

Electronic Model

Q. Have you included a working Excel model for the rate design?

A. Yes. The rate design phase is completed in its entirety within the electronic model provided as DEW Exhibit 3.09 in the testimony of Jordan K. Stephenson. It is a working Excel model that includes all revenue requirement, cost of service, and rate design calculations. The rate design calculations are in the yellow tabs. All other tabs are used for calculating the revenue requirement and class cost of service.

Revised Tariff Pages

Q. Have you provided revised tariff pages for the affected rates in this case?

A. Yes. DEW Exhibit 5.06 is a set of legislative tariff pages with revisions to all modified rates. And DEW Exhibit 5.07 is a proposed final version of the same set.

Q. Does this conclude your testimony?

A. Yes.

State of Utah)

) ss.

County of Salt Lake)

I, David C. Landward, being first duly sworn on oath, state that the answers in the foregoing written testimony are true and correct to the best of my knowledge, information and belief. Except as stated in the testimony, the exhibits attached to the testimony were prepared by me or under my direction and supervision, and they are true and correct to the best of my knowledge, information and belief. Any exhibits not prepared by me or under my direction and supervision are true and correct copies of the documents they purport to be.

David C. Landward

SUBSCRIBED AND SWORN TO this 1st day of November, 2019.

GINGER JOHNSON
Notary Public State of Utah
My Commission Expires on:
August 4, 2023
Comm. Number: 707241

Notary Public