BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

NORTHWEST NATURAL GAS COMPANY,

Respondent.

DOCKET UG-181053

RESPONSE TESTIMONY OF SCOTT J. RUBIN

ON BEHALF OF THE

WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL,

PUBLIC COUNSEL UNIT

EXHIBIT SJR-1T

JULY 3, 2019

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Scott J. Rubin. My business address is 333 Oak Lane, Bloomsburg, PA.

Q. By whom are you employed and in what capacity?

A. I am an independent consultant and an attorney. My practice is limited to matters affecting the public utility industry.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the Public Counsel Unit of the Washington Attorney General's Office ("Public Counsel").

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

A. The purpose of my testimony is to review the revenue decoupling mechanism proposed by Northwest Natural Gas Company ("Company"), render an opinion as to its reasonableness, and make any recommendations I consider appropriate.

Q. What are your qualifications to provide this testimony in this case?

A. I have testified as an expert witness before utility commissions or courts in the District of Columbia; the province of Nova Scotia; and the states of Alaska, Arizona, California, Connecticut, Delaware, Illinois, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Mississippi, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, South Carolina, and West Virginia. I also have testified as an expert witness before various federal, state, and local legislative committees. I have served as a consultant to the staffs of four state utility commissions, as well as to several national utility trade associations, and state and local governments throughout the country. Prior to establishing my own consulting and law practice, I was employed by the Pennsylvania

Office of Consumer Advocate from 1983 through January 1994 in increasingly responsible positions. From 1990 until I left state government, I was one of two senior attorneys in that office. Among my other responsibilities in that position, I had a major role in setting its policy positions on water and electric matters. In addition, I was responsible for supervising the technical staff of the office. I also testified as an expert witness for that office on rate design and cost of service issues.

Throughout my career, I developed substantial expertise in matters relating to the economic regulation of public utilities. I have published articles, contributed to books, written speeches, and delivered numerous presentations, on both the national and state level, relating to regulatory issues. I also have served as a reviewer for four journals that publish scholarly works related to the regulated industries. I have attended numerous continuing education courses involving the utility industry. I also have participated as a faculty member in utility-related educational programs for the Institute for Public Utilities at Michigan State University, the American Water Works Association, and the Pennsylvania Bar Institute. My curriculum vitae is provided as Exhibit SJR-2.

Q. Do you have any experience that is particularly relevant to the issues in this case?

A. Yes, I do. I have testified on numerous occasions as a rate design, cost of service, and tariff expert in cases involving electric, natural gas, water, and wastewater utilities. For example, during the past three years I have testified in natural gas utility proceedings in Illinois (Nicor), Massachusetts (Boston Gas and Colonial Gas), North Dakota (Montana-Dakota Utilities), Nova Scotia (Heritage Gas), and Pennsylvania (Philadelphia Gas Works).

Q. Do you have any experience analyzing proposed or existing revenue decoupling mechanisms?

A. Yes. I have reviewed and analyzed revenue decoupling mechanisms for natural gas distribution or water utilities in California, Illinois, Maine, Pennsylvania, and West Virginia.

II. SUMMARY

Q. Please summarize your conclusions and recommendations.

A. My conclusions and recommendations are summarized as follows:

- In light of the Company's significant growth projections, I conclude that per-customer decoupling would not result in just and reasonable rates for the Company. Indeed my analysis shows that it would produce a windfall to the Company in the millions of dollars.
- Using rate class decoupling would insulate the Company from potential downturns in consumption while still providing some return on the incremental investment made to serve new customers.
- If the Commission decides to allow the Company to implement a revenue decoupling mechanism for residential customers, the decoupling should occur on a total-sales basis for the Residential class.

III. REVIEW OF PROPOSED SCHEDULE 300 (DECOUPLING MECHANISM)

Q. Are you familiar with the Company's proposal to implement a revenue decoupling mechanism for certain Residential and Commercial rate schedules?

A. Yes, I have reviewed the Company's originally proposed Schedule 300; the Partial Multi-Party Settlement Agreement on Decoupling dated May 23, 2019 (in which Public Counsel did not join); Company witness Kyle Walker's direct testimony concerning revenue decoupling (Exhibit KTW-1T and accompanying exhibits); and the Company's responses to various discovery requests related to its revenue decoupling proposal, customer growth, and sales.

A. Overview of Revenue Decoupling

Q. Before you discuss the Company's proposal in detail, what is revenue decoupling?

A. Revenue decoupling is an approach to utility ratemaking that seeks to sever the link between a utility's sales and the revenue the utility receives. Decoupling was first advanced by advocates who sought to garner utility support for demand-side management and other conservation programs. Under the theory of decoupling, if a utility's revenues were no longer dependent on the amount of service sold, utilities would no longer oppose utility-sponsored demand-side management programs. As such, revenue decoupling dramatically changes the nature of utility regulation.

Q. How does decoupling change the nature of utility regulation?

A. When I began working in the field of utility regulation more than 35 years ago, the purpose of regulation was to set the prices that consumers pay for a service when the market is not sufficiently competitive to set the price through normal market forces.

Economic regulation of utilities also serves another essential purpose: to minimize the swings between surplus and scarcity that are characteristic of a competitive market seeking theoretical (but rarely obtainable) equilibrium. When a monopoly provides an essential service, there is no tolerance for -- and potential serious harm to public health and safety from -- the scarcity that can occur in a competitive market. Traditional economic regulation of utilities is designed to set the price at a level that is close to, but somewhat higher than, a competitive market clearing price so that the risk of scarcity (demand exceeding supply) is minimized. This is one of the reasons that utility rates usually are based on average costs rather than marginal costs. By definition, a natural monopoly has declining marginal costs, so average costs usually are higher than

marginal costs. Setting prices at this higher level tends to depress demand and minimize the chance that demand will exceed supply, creating a shortage.

Q. How does revenue decoupling differ from traditional regulation?

A. Revenue decoupling deviates significantly from the traditional purpose of utility regulation. While traditional regulation is focused on setting the price the consumer pays for the service, revenue decoupling focuses on the revenues the utility receives. To understand the differences between traditional regulation and decoupling, we can think about the essential economics of a marketplace.

In a competitive market, when prices change, consumers respond to the change in prices and other factors (weather, household income, the relative price of other goods and services, and numerous other factors) and determine how much of the good or service they will buy. The seller's revenues are based on the amount of the good or service sold at each price. Prices to the consumer and revenues to the seller change constantly.

Under traditional utility regulation, regulators estimate a utility's costs (including operating costs, taxes, depreciation, and capital costs) and the amount of service the utility will sell. Based on those estimates, the regulator determines the price consumers will pay. What actually happens after that is left to normal market forces. If the winter is cold or if a customer changes its electric clothes dryer to a gas one, the consumer will buy more natural gas and the utility's revenues will be higher than anticipated. If the reverse occurs (there is a warm winter or a consumer replaces its gas stove with an electric one, or the utility provides poor service and the consumer looks for alternatives), then the consumer will use less gas and the utility's revenues will fall. Traditional regulation sets one thing – the price the consumer will pay. Once the price is set, the market takes over

from there. There are no guarantees: consumers do not know what their total bill will be (that will depend on how much gas they use, which is the product of numerous factors) and the utility does not know what its revenues will be (that will depend on how much gas it sells, which is also the product of numerous factors).

Revenue decoupling represents a wholly different approach to regulation. Under decoupling, rather than setting the price for service, the regulator determines the revenues the utility will receive. Prices can change frequently (under some decoupling mechanisms, they may change each month) and market forces no longer have an effect on the utility. Consumers still will respond to the price (as well as all of the other factors that affect consumption), but if they decrease consumption in response to those factors, it may lead to price increases rather than a decline in the utility's revenues.

At its core, then, revenue decoupling is focused on the utility (ensuring a particular level of revenues for the utility) rather than on the customer (setting the price the customer pays).

Q. Are you familiar with the use of decoupling mechanisms for natural gas utilities?

A. Yes, I have been involved in cases for four natural gas utilities in Illinois and one in Maine where decoupling mechanisms were proposed.

Q. Are there different types of revenue decoupling mechanisms?

A. Yes. In my experience, there are at least three different types of revenue decoupling mechanisms, with some variations around those.

One method is full revenue decoupling. In this approach, the utility's entire revenues from the relevant customer classes are reconciled. Under this method, a utility is indifferent to the number of customers it adds or loses or to any changes in sales of gas.

If, for example, its revenue requirement is set to collect $1 million from the residential class, then its revenues are reconciled to ensure it collects exactly $1 million.

A second method is full sales decoupling. In this approach, the utility's revenues from sales of gas to the relevant customer classes are reconciled. Under this method, if a utility adds or loses customers, its revenues from fixed charges (customer charges, meter charges, etc.) will change and will not be reconciled, but its revenues from sales of gas will be reconciled.

Another approach to decoupling is limited decoupling. This type of mechanism may be used to isolate the effects of conservation or demand-management programs (the original purpose of revenue decoupling) from other reasons sales may change (such as weather, outages, or changes in the number of customers).

Q. You mentioned that there are variations of these methods. Are there any variations that you focused on in analyzing the proposals in this case?

A. Yes. Under any of the general decoupling mechanisms, sales or revenues can be measured on a per-customer basis or a per-class basis.

Per-customer decoupling sets as its baseline the average gas sales or revenues received for each customer in the class.[1] For example, if a utility's rates are designed to collect $1 million from selling gas to 5,000 residential customers, then its average sales are $200 per customer and that would become the baseline for a revenue-based per-customer decoupling mechanism. Expanding the same example, if the utility uses a

[1] Some decoupling methods are based on the "margin" per customer; that is, the revenues per customer (or per unit of sales) that go toward the recovery of fixed costs. For most natural gas utilities, however, there is essentially no incremental cost in base rates associated with changes in commodity sales. Thus, for most gas utilities -- including the Company -- there is no practical difference between a margin calculation and the base rate itself. Thus, in this case "lost margin" is the same as lost sales (or revenues) and "found margin" is the same as increased sales (or revenues).

sales-based decoupling mechanism and the rate case projection is that it would sell three million therms of gas to residential customers, then a sales-based per-customer decoupling mechanism would be based on sales of 600 therms per customer per year.

Q. Using that same example, how would rate class decoupling differ from per-customer decoupling?

A. Under rate class decoupling, the class totals become the baseline without regard to the number of customers added or lost. Using the same example but with rate class decoupling, the revenue baseline would be $1 million from gas sales. Adding or losing customers would not change that baseline; the utility's revenues from gas sales to the class would be reconciled to achieve exactly $1 million. Similarly, using the same example but with a sales-based decoupling mechanism, sales to the customer class would be reconciled to three million therms annually, regardless of any changes in the number of customers served.

B. Per-Customer Decoupling is Not Appropriate for a Utility Experiencing Significant Customer Growth

Q. Do you have any concerns with the use of per-customer decoupling for a growing natural gas utility?

A. Yes. I have serious concerns with the use of per-customer decoupling for a natural gas utility that is adding new residential customers because new housing stock is much more energy efficient than the existing housing stock. Advances in space heating efficiency, water heating efficiency, water efficiency of appliances that use hot water, different types of insulation, and smart thermostats are just some of the innovations that have made new construction much more energy efficient -- particularly for natural gas usage -- than the average existing home.

Q. Are there any data generally demonstrating the efficiency of new home construction?

A. Yes. I analyzed data from the U.S. Department of Energy's Residential Energy Consumption Survey (RECS) that was conducted in 2015. The detailed data (called "microdata") from the survey were released in December 2018.[2]

I selected all single-family housing units (either attached or detached, but excluding mobile homes) that use natural gas for space heating. The survey reports many details about the housing units and energy consumption, but for this purpose I focused on just two characteristics: the year the housing unit was constructed (which appears in ranges in the survey) and the total amount of natural gas used in 2015 (reported in 100 cubic feet). One hundred cubic feet of natural gas is approximately equal to one therm and, since the Company reports gas usage in therms, I also will use that term.

I show the results of my analysis in Exhibit SJR-3. It can be seen that in 2015 there were approximately 49.9 million single-family housing units that used natural gas. On average, they used 679 therms per year. What is striking, though, is how average energy consumption changes with the age of housing stock. The newest homes reported in the survey, those constructed between 2010 and 2015, reported using only 587 therms per year, compared to 682 therms on average for homes constructed before 2010. That is, the newest construction used about 14 percent less natural gas, on average, than older homes.

[2] U.S. Energy Information Administration, *Residential Energy Consumption Survey, 2015 RECS Survey Data* (December 2018) www.eia.gov/consumption/residential/data/2015/index.php?view=microdata.

Q. If, hypothetically, per-customer decoupling is used for a natural gas utility that is experiencing significant residential growth, would that have any unexpected effects on existing residential customers?

A. Yes. Where a gas utility is growing significantly, using per-customer decoupling has the effect of requiring existing customers to guarantee higher consumption from each new customer than the new customer is expected to use. The national RECS data show that new homes are likely to use 95 therms per year less than homes that were constructed prior to 2010. If per-customer decoupling is used, then existing customers would be required to make up this so-called "shortfall" of 95 therms per year for each new customer. If customer growth is relatively small, this amount would be insignificant. But if a utility is adding a significant number of residential customers compared to its existing number of customers, then the difference could translate into a windfall of millions of dollars for the utility.

Q. Can you provide an example using the same hypothetical utility class you discussed above?

A. Yes, I will assume the same hypothetical utility residential class with $1 million in annual revenues from gas sales (excluding the cost of gas), 5,000 customers, three million therms of sales, and $200 in sales revenue per customer. In addition, I will assume that the utility experiences three percent customer growth, adding 150 new customers, and that each new customer uses 14 percent less gas per customer than existing customers (or 516 therms per new customer). The following table illustrates what would happen under per-customer decoupling assuming existing customers still use exactly three million therms of gas.

	Customers	Therms	Sales Revenues
Existing customers	5,000	3,000,000	$ 1,000,000
New customers	150	77,400	25,797
Total	5,150	3,077,400	$ 1,025,797
Average		597.6	$199.18

In this example, adding new, more efficient, customers to the system reduces the average sales per customer to 597.6 therms (from 600), and the average revenue per customer declines to $199.18 (from $200.00). Under the revenue-per-customer model, the assumed $200 in sales per customer would dictate a total revenue of $1,030,000, but actual usage results in a total sales revenue of $1,025,797. So even though the hypothetical utility's revenues increased by $25,797, per-customer decoupling would show that the utility experienced a "shortfall" of $0.82 per customer, or approximately $4,200, requiring a 0.4 percent increase in revenues.[3]

Q. A 0.4 percent increase doesn't seem very significant. Why are you so concerned?

A. My concern comes from this type of growth continuing for several years. If this same level of growth continued for five years without resetting the baseline, there would be 750 new customers (15 percent more than the baseline number of customers) each using 14 percent less gas than was assumed in the baseline. Customers, usage, and revenues under this hypothetical scenario are shown in the following table.

	Customers	Therms	Sales Revenues
Existing customers	5,000	3,000,000	$ 1,000,000
New customers	750	387,000	128,987
Total	5,750	3,387,000	$ 1,128,987
Average		589.0	$196.35

[3] "Required" revenues of $200 per customer x 5,150 customers = $1,030,000, minus actual revenues of $1,025.797 leaves a "shortfall" of $4,203. $4,203 ÷ $1,025,797 = increase of 0.41%.

In this example, after five years of growth, the average sales per customer declines to 589 therms (from 600) and the average revenue per customer declines to $196.35 (from $200.00). So even though the hypothetical utility's revenues increased by more than 12 percent over the baseline, per-customer decoupling would show that the utility experienced a "shortfall" of $3.65 per customer, or approximately $21,000, requiring an increase of almost two percent in revenues over the baseline in just that one year.[4] I would emphasize that this revenue requirement increase would occur even though the utility's revenues are already almost 13 percent higher than the baseline due to increased sales to the new customers.

Q. What do you conclude?

A. I conclude that if a natural gas distribution utility is likely to experience significant customer growth, per-customer decoupling should not be implemented primarily because new housing is more energy efficient than the existing housing stock. In that situation, per-customer decoupling can lead to significant rate increases even though the utility's sales and revenues are increasing. This has the potential to create a significant windfall to the utility and harm to the utility's existing customers.

Q. Are you alone in your assessment of the limitations of per-customer decoupling?

A. No. A 2011 report on decoupling from the Regulatory Assistance Project echoes my concern. The report states: "The revenue-per-customer, or RPC method [of decoupling], may not be appropriate in areas with stagnant economies or volatile spurts of growth, *or*

[4] "Required" revenues of $200 per customer x 5,750 customers = $1,150,000, minus actual revenues of $1,128,987 leaves a "shortfall" of $21,013. $21,013 ÷ $1,128,987 = increase of 1.86%.

where new customers are significantly different in usage patterns than existing customers."[5]

C. Company-Specific Data Demonstrate that the Company's New Residential Customers Use Significantly Less Gas Than Existing Customers

Q. Do you have any data concerning the gas usage of new customers specific to the Company?

A. Yes. I evaluated three sources of data. First, I reviewed RECS data to determine if there were representative data for Washington. I concluded that the RECS data set does not contain useful information for the state. That survey is not large enough to have state-specific data. The smallest geographic division is a U.S. Census region. Washington is in the Pacific region (along with California and Oregon). Because the sample is population-weighted, the Pacific region largely represents California which has very different weather patterns, housing unit characteristics, and natural gas usage than Washington. For example, average natural gas consumption (for customers who use gas) in the Pacific region is only 395 therms per year, compared to the Company's average residential usage of 670 therms per year. Indeed the Company's gas usage is much closer to the national average (annual usage of 679 therms per home) than it is to the Pacific region's usage.

[5] Regulatory Assistance Project, *Revenue Regulation and Decoupling: A Guide to Theory and Application* at 16 (June 2011) (emphasis added), https://www.raponline.org/wp-content/uploads/2016/05/rap-revenueregulationanddecoupling-2011-04.pdf.

Q. What is the second source of data you evaluated?

A. The U.S. Department of Energy publishes a data set known as the Low-Income Energy Affordability Data (LEAD) Tool.[6] LEAD compiles data from 2015 on energy costs by income level, housing type, age of housing stock, primary heating fuel, and other factors for each county in the United States, as well as for many cities and towns. I extracted the following data from the data set for the three counties served by the Company (Clark, Klickitat, and Skamania): age of housing stock and monthly natural gas costs for households that report using natural gas as their primary heating fuel. I summarize the results in Exhibit SJR-4.

The results from the LEAD data set for the Company's service area are consistent with the national RECS data. Specifically, the data show that gas-using housing units constructed after 2009 have an average gas bill of $80.59 per month compared to all housing constructed before 2010 which has an average gas bill of $113.69 per month. That is, gas bills for new housing stock are about 30 percent lower, on average, than gas bills for older housing.

Q. Did you use a third set of data?

A. Yes. To further refine my analysis I used data provided by the Company in discovery. In response to Public Counsel Data Request 137, the Company provided actual consumption data for each month of the test year for each of its more than 77,000 residential customer accounts. The data set also includes the year the housing unit became a customer of the Company. I analyzed that data by looking at data for all customers who were on Rate

[6] U.S. Department of Energy, *Low-Income Energy Affordability Data (LEAD) Tool*, OPENEI.ORG, https://openei.org/doe-opendata/dataset/celica-data (last visited June 28, 2019).

R02 for all 12 months of the test year. There are more than 72,000 customers in the resulting set of data that I analyzed.

I then calculated the average annual usage for customers by the year the housing unit became a customer of the Company. The results are shown in Exhibit SJR-5. That exhibit shows that newer customers (those who became customers from 2010 to 2017) used an average of 522 therms per year. In contrast, residences that became customers prior to 2010 used an average of 696 therms per year. That is, newer customers used almost 175 fewer therms per year -- approximately 25 percent less gas -- than customers in older homes.

Q. Do you have any reason to question the accuracy of the Company's data?

A. No. The Company's data are very consistent with the LEAD data for the counties served by the Company and with the general national trend showing that newer housing units are more energy efficient than older units. Moreover, data provided by the Company in response to WUTC Staff Data Request 139 show a dramatic surge in new customers installing tankless (also known as on-demand) water heating. Specifically in that response, the Company provided data for each of the more than 18,000 residential customers it added from 2008 through 2018. I summarize the data, by year, in Exhibit SJR-6. While there are year-to-year fluctuations for most appliance types, most of them remain fairly consistent over the 11-year period. The big exception is in water heating. Up through 2013, only about five percent of new customers installed tankless water heating, with 70 percent or so installing water heaters with tanks. In 2014, the percentage of tankless water heaters doubled and it has increased dramatically since then. By 2018,

almost 60 percent of new customers opted for tankless water heating with only 10 percent using water heaters with storage tanks.

Q. Does the installation of tankless water heating affect natural gas usage?

A. Yes, the effect on natural gas usage is significant. According to the U.S. Department of Energy, on average it takes about 41,000 BTU (0.41 therms) per day to heat water for a typical household.[7] Older storage tank water heaters were about 62 percent efficient, meaning that it would take about 0.66 therms per day of natural gas to heat water, or 242 therms per year. Newer Energy Star tank water heaters are about 67 percent efficient,[8] so they would use an average of about 224 therms of gas per year. But the newer Energy Star tankless water heaters are 90 percent efficient or better, using only 166 therms of gas per year.[9] In other words, using tankless water heating (as do most new customers of the Company) instead of older models with tanks saves approximately 75 therms of gas per year. That represents more than a 10 percent reduction in annual natural gas usage for a typical home.

In addition, other new appliances also improve energy efficiency. Dishwashers and clothes washer use less hot water.[10] New furnaces are more efficient than older models of the same output.[11] Enhanced insulation and more energy-efficient windows in

[7] *Estimating Costs and Efficiency of Storage, Demand, and Heat Pump Water Heaters,* ENERGY.GOV, https://www.energy.gov/energysaver/estimating-costs-and-efficiency-storage-demand-and-heat-pump-water-heaters (last visited June 28, 2019).

[8] *Water Heater Key Product Criteria*, ENERGYSTAR.GOV, https://www.energystar.gov/products/water_heaters/residential_water_heaters_key_product_criteria (last visited June 28, 2019).

[9] *Id.*

[10] *Certified Products: Appliances*, ENERGYSTAR.GOV, https://www.energystar.gov/products/appliances (last visited June 28, 2019) (Energy Star clothes washers use 33 percent less water than standard models; an Energy Star dishwasher will save more than 3,800 gallons of water compared to a standard model).

[11] *Energy Saver: Furnaces and Boilers*, ENERGY.GOV, www.energy.gov/energysaver/home-heating-systems/furnaces-and-boilers (last visited June 28, 2019) (old, low-efficiency heating systems are between 56 percent and 70 percent efficient; new, high-efficiency systems are 90 percent to 98.5 percent efficient).

new homes can further reduce space-heating energy requirements, as can smart thermostats and other measures.[12]

Thus, from both the consistency of the data sets and the underlying information we know about energy efficiency and appliance penetration, the data make sense. It is reasonable to conclude that new residential customers can be expected to use significantly less natural gas than the Company's existing residential customer base.

Q. What do you conclude from these data?

A. I conclude that newly constructed homes in the Company's service area are likely to use much less natural gas than existing homes. This means that implementing per-customer decoupling would result in existing customers paying increased rates to guarantee a level of revenues from new customers that those customers are not expected to generate. Moreover, when the Company adds a new customer, its revenues increase from both the customer charge ($8.00 per month) and the per-therm distribution charge. If the purpose of decoupling is to ensure that the utility collects the revenues established in the rate case, it is illogical to say that adding new customers somehow creates a revenue shortfall. Yet, that is exactly the result under per-customer decoupling. It is grossly unfair to existing customers to guarantee that those new customers should provide even higher revenues than it is reasonable for the Company to expect to receive.

[12] *Energy Saver: Thermostats*, ENERGY.GOV, www.energy.gov/energysaver/thermostats (last visited June 28, 2019) (smart thermostats can help save as much as 10 percent per year in heating and cooling costs).

D. The Company Forecasts Significant Customer Growth

Q. Is the Company expecting significant growth of residential customers?

A. Yes. In response to WUTC Staff Data Request 203, the Company provided its growth forecast. I am attaching a copy of that response as Exhibit SJR-7. The response shows that the Company expects to add more than 20,000 residential (Rate R02) customers over the next six years, increasing its customer base by more than 25 percent.

E. Given the Company's Projected Growth, Per-Customer Decoupling Would Result in a Windfall to the Company in the Millions of Dollars

Q. Have you estimated the effect of different decoupling mechanisms on Company revenues assuming the Company's growth projections?

A. Yes. In Exhibit SJR-8, I have constructed an example to illustrate the effects of two decoupling methods on the Company -- per-customer decoupling and rate class decoupling. Both examples use the same assumptions. Specifically, I assume the Company's projected level of residential customer growth from 2019 through 2024 (from Exhibit SJR-7), the average level of consumption from existing customers (670 therms per year), the average level of consumption from new customers based on the test-year usage from customers added between 2010 to 2017 as I described above (522 therms per year), and the residential rates (Rate R02) contained in the settlement reached by all parties (a customer charge of $8.00 per month and a distribution charge of $0.4652 per therm).

Using those assumptions, I calculated the effect of per-customer decoupling in each year from 2019 through 2024. Over those six years, the Company would collect $24.4 million in excess of the base level of residential revenues resulting from the revenue requirement settlement in this case ($30.5 million per year). That is, the

Company would receive additional revenues averaging more than $4 million per year if per-customer decoupling is adopted.

Q. How would that differ if rate class decoupling were adopted?

A. The second example in Exhibit SJR-8 shows that rate class decoupling would increase the Company's revenues by $5.7 million over the six-year period -- an average of almost $1 million per year. These are the revenues that would be paid by new customers for the monthly customer charge ($8.00 per month). I have assumed, for purposes of this example, that customer charge revenues are not reconciled under rate class decoupling.

Q. How would residential customers' rates be affected under the two options?

A. In this example under per-customer decoupling, customers would experience a rate increase each year. By 2024, the rate would be 48.82¢ per therm -- an increase of 2.3¢ per therm (4.9 percent) over the settlement rate of 46.52¢ per therm. That is, even though the Company added more than 20,000 customers and increased its sales by almost 10 million therms per year (a sales increase of more than 19 percent), per-customer decoupling would result in almost a five percent rate increase.

In contrast, rate class decoupling would be much fairer to existing customers. The rate per therm would decline each year to recognize that the Company is selling more gas than projected in the rate case. By 2024, the rate would be 38.95¢ per therm. This rate would be sufficient to provide the Company with $23.34 million in usage revenues from Rate R02 customers -- exactly the revenues projected in this case. Further, the Company would retain all additional customer charge revenues, averaging almost $1 million per year.

Q. Your examples assume that consumption is exactly equal to the average level of consumption from existing customers. Have you analyzed what would occur if consumption were to be less than average?

A. Yes. Exhibit SJR-9 follows the same format as Exhibit SJR-8 except it assumes that consumption is 10 percent less than average in each year. So instead of existing customers using 670 therms each, they use only 603 therms each; and instead of new customers using 522 therms each, they use 470 therms each.

As one would expect, the revenues to the Company are the same as they were in Exhibit SJR-8. Indeed, that is the very purpose of decoupling -- to insulate the utility from the effects of changes in the level of sales.

The rates paid by customers, however, are very different. Under per-customer decoupling, the rate per therm would be 54.25¢ by 2024 -- an increase of more than 16 percent over the initial rate of 46.52¢. That is, even though the Company's sales increased by 3.7 million therms in this example, customers' rates would increase by more than 16 percent because of the addition of more than 20,000 customers, each of whom uses less gas than existing customers.

Q. In your low-use example, what rate changes would occur under rate class decoupling?

A. Under rate class decoupling, customers' rates would increase in the first year, but then would decline each year. By 2024, the rate would be 43.27¢ per therm -- a seven percent decrease from the settlement rate set in this case. The decline in the rate per therm reflects the fact that sales increased by more than 3.7 million therms compared to the baseline level set in this case.

Q. Why did you select a 10 percent reduction in Exhibit SJR-9?

A. I reviewed the Company's actual level of sales to Rate Schedule R02 over the past six years (2013-2018), as provided in response to WUTC Staff Data Request 38. The following table shows average sales per customer during each of those years.

Average Annual Sales per Customer: Residential Rate Schedule R02 (2013-2018)

Year	Customers	Therms	Annual Therms per Customer
2013	65,413	46,508,856	711.01
2014	67,037	44,549,437	664.55
2015	68,763	39,688,937	577.18
2016	70,780	42,514,492	600.66
2017	72,941	54,109,424	741.83
2018	75,290	49,469,887	657.06

During the past six years, the lowest level of sales per customer experienced was 577 therms in 2015. The next lowest sales level was 601 therms per customer in 2016. After factoring in customer growth (and the lower usage per customer of new customers), the 10 percent reduction I selected results in average sales per customer from 2019 through 2024 ranging from a low of 576 to a high of 601 therms per customer. That is, all six years in my analysis would look like the two worst years for sales the Company experienced between 2013 and 2018. Thus I consider the 10 percent reduction to be a reasonable worst-case scenario.

Q. The Company has claimed that the cost of adding new customers would justify an increase in revenues. Do you agree?

A. I do not agree that the Company's cost of adding new customers justifies the level of increased revenues that would occur under per-customer decoupling. Specifically, in response to WUTC Staff Data Request 202 (attached as Exhibit SJR-10), the Company

provided its actual construction cost to add new residential customers from 2013 through 2018. In calculating the likely cost to add a new customer, I removed costs associated with significant extension projects that either had a combination of residential and non-residential customers or that appear to be backbone projects where just a few customers had connected in the year of completion (resulting in extremely high costs per customer).

The result, as I show in Exhibit SJR-11 is that for the past six years the Company has incurred a capital cost of between $1,200 and $1,300 to add a new residential customer. This is significantly less than the average embedded rate base investment per residential customer, which is approximately $1,800, as I show in Exhibit SJR-12. Thus, charging existing rates to new customers -- even if those customers use less gas than existing customers -- should result in the Company receiving a reasonable return on its investment prior to the next case. I illustrate this in Exhibit SJR-13. That exhibit shows that an average existing customer is expected to provide annual base-rate revenues of $407.91 compared to the average rate base per existing customer of almost $1,800, or an average of 22.7 cents of revenues per dollar of rate base investment.

The same exhibit shows that even though a new customer uses much less gas than an existing customer, the new customer actually provides more revenues per dollar of rate base investment. Specifically, an average new customer would provide annual revenues of $338.93, but the incremental investment to serve the customer is only about $1,300. Thus, the new customer provides more than 26 cents of revenue per dollar of rate base investment.

Q. What does this mean?

A. This means that charging the settlement rates to new customers would generate a larger return on incremental investment than is provided by existing residential customers. This makes sense because one would expect the cost-effective addition of new customers to spread the utility's fixed costs (transmission network, gate stations, office buildings, computer systems, etc.) over a larger customer base, thereby reducing the average fixed cost per customer. Thus, there is no need to have any type of special ratemaking mechanism to ensure that the Company is fairly compensated for the costs of serving new customers. In fact, simply charging new customers the settlement rates will provide the Company with a fair return on the incremental investment it makes to serve that customer.

Q. Have you calculated the return the Company would earn on the investment to serve new customers under each decoupling method?

A. Yes. Using the example I presented in Exhibit SJR-8 and an estimated capital cost of $1,300 to add a new residential customer (from Exhibit SJR-11), I estimate that adding 20,824 customers over the next six years (as the Company projects) would cause the Company to incur a capital investment of approximately $27.1 million, an average of $4.5 million per year. Without getting extremely precise, we can estimate that a reasonable return on that investment, including taxes and depreciation, would be about 15 percent annually, or approximately $0.35 million in the first year (one-half of a year), $1.05 million in the second year, and so on. In total over six years, the return requirement would total approximately $12.6 million.

As I demonstrated above, per-customer decoupling would result in the Company receiving additional revenues of more than $24 million over the six-year period, or nearly twice the level of a reasonable return on its incremental investment -- a windfall of nearly $12 million. Remember, this figure assumes that existing customers use exactly the same amount of gas as is assumed in the proof of revenues in this case. The windfall is the result of using per-customer decoupling to create an artificial "shortfall" of revenues because new housing is more energy efficient than older housing.

In contrast, using rate class decoupling permits the Company to retain the additional customer charge revenues from serving new customers, but new customers' consumption is used to offset any changes in consumption by existing customers. Rate class decoupling would provide the Company with additional revenues (under expected usage conditions) of approximately $6 million over the six-year period.

Q. Would a return of almost $6 million over six years be sufficient to provide the Company with a reasonable return on its investment?

A. A return of almost $6 million over six years would not provide the Company with a full return on its investment, but depending on how the Company financed the new plant it might be sufficient to compensate the Company for its incremental cost of capital to serve new customers. If the Company were to determine that the additional revenues under rate class decoupling were insufficient to provide an adequate return on investment, it would need to file a rate case to include the investment in rate base and bring all elements of the revenue requirement (revenues, expenses, etc.) back into balance.

F. Revenue per Customer Decoupling is Not Reasonable for this Utility at this Time. If the Commission Determines that Some Form of Decoupling is Appropriate, it Should Adopt Rate Class Decoupling.

Q. In your expert opinion, it is reasonable or appropriate to adopt revenue per customer decoupling for the Company at this time?

A. No. The Company is engaged in a process that it expects to increase its residential customer base by 25 percent over the next six years. Further, this growth is occurring at a time when as a result of appliance efficiency and other factors we expect new customers to use substantially less natural gas than existing customers. Under these specific circumstances, it is unreasonable to use a reconciliation method (per-customer decoupling) that assumes each new customer would use the same amount of gas as the average existing customer. As I demonstrated, under the facts facing this Company at this time, using per-customer decoupling is likely to result in a windfall to the Company in the millions of dollars.

Q. Is cost-effective expansion in the best interests of existing customers?

A. The cost-effective addition of customers should be beneficial to existing customers, in that it reduces each customer's burden of supporting backbone infrastructure and common plant. For example, adding new customers should not lead the Company to add new transmission mains, office buildings, computer systems, gate stations, and so on. Thus, the costs of that common infrastructure would be shared among more customers, reducing the cost-per-customer to support the system.

Q. Could decoupling change that result?

A. Yes, it could. If per-customer decoupling is adopted during the Company's growth phase, it is likely to result in the rates to existing customers increasing even as overall sales

increase and the cost-per-customer should be decreasing. That is, per-customer decoupling would transfer the benefit of economies of scale (lower fixed costs per customer) from existing customers to the Company. This is grossly unreasonable and, as I demonstrated above, would result in a windfall to the Company and its shareholders.

Q. Is there a form of decoupling that avoids these problems?

A. Yes. Rate class decoupling avoids these problems. The examples I discussed above show that rate class decoupling during a high-growth period would result in lower rates to existing customers. This provides existing customers with some of the expected benefits from system growth -- spreading fixed costs over a larger customer base, thereby reducing the cost-per-customer to support that investment. The form of rate class decoupling I modeled does not reconcile the customer charge revenues from new customers. In my examples, this would permit the Company to keep additional revenues averaging almost $1 million per year. Thus, this form of rate class decoupling would appropriately share the benefits of growth between the Company (providing a return of and on its incremental investment) and customers (providing credit for the backbone and common costs used by new customers but fully included in existing customers' rates).

Q. Just to be clear, are the conclusions and recommendations you reached specific to the circumstances faced by this Company at this time?

A. Yes. There may be circumstances where per-customer decoupling is a reasonable approach. There also may be times when it is reasonable to include customer charge revenues in the decoupling calculation, or to make other changes. Decoupling is not a single, one-size-fits-all rate mechanism. It must be tailored to the specific circumstances facing each utility. My conclusions and recommendations in this case are based on the

specific facts for Northwest Natural Gas at this point in time. Evaluating a different utility, or even evaluating this Company in a future case, could lead to a different result.

Q. Are you suggesting that the Company's decoupling mechanism may change over time?

A. Yes, that is certainly a possibility. If customer growth is faster or slower than projected; if the difference in energy consumption between new and existing customers changes; if the incremental cost of adding customers changes; or if any number of other factors change, then the Commission could reconsider the specific elements of the decoupling tariff. All of ratemaking is a dynamic process that adapts to new facts and circumstances, and the elements of a decoupling mechanism should be no different.

G. Review of Testimony in Support of Decoupling Settlement

Q. Have you reviewed the testimony submitted in support of the Partial Multiparty Settlement Agreement on Decoupling ("Decoupling Settlement")?

A. Yes. I reviewed the Joint Testimony (Exhibit JT-3T) as well as the separately filed testimony of Staff witness Jing Liu (Exhibit JT-1T), both of which were filed on June 6, 2019.

Q. On page 15, the Joint Testimony states that the Decoupling Settlement "strikes a reasonable balance between the interests of the Company and its customers." Do you agree?

A. No, I do not agree. As I explained above, the use of per-customer decoupling for the Company at this time is not consistent with the public interest, does not result in just and reasonable rates, and is not in the best interests of the Company's residential customers.

Q. Page 3 of Jing Liu's testimony states: "decoupling reduces the utility's revenue volatility and provides a better opportunity for the utility to recover its fixed costs during a time period characterized with flat load growth yet increasing fixed costs." Is that an accurate statement for NW Natural at this time?

A. No, it is not. As I explained above, the Company is experiencing significant customer growth, which, in turn, is expected to significantly increase the amount of gas the Company sells. Even though each new customer is expected to use less gas than an average existing customer, the Company expects to add thousands of new customers. Collectively, those new customers will increase the Company's sales by millions of therms per year. Thus, for the Company at this time, it is inaccurate to refer to this as a "time period characterized with flat load growth."

Q. On page 5 of Jing Liu's testimony, it states that the decoupling mechanism "would compare the normalized, allowed revenue to the actual revenue." Is that statement entirely accurate?

A. No. The decoupling mechanism proposed by the Company, and the one recommended by the settling parties, does not compare allowed revenues to actual revenues for each customer class. Rather, the proposed decoupling mechanism compares allowed base rate revenues from gas sales to actual base rate revenues from gas sales. The distinction is extremely important because the proposed decoupling mechanism excludes all customer charge revenues. Given the magnitude of growth expected by the Company, customer charge revenues ($96 per customer per year) are an important source of additional revenues that are completely ignored in the decoupling proposal. Thus, as I explained above, the Company retains every dollar of additional customer-charge revenues (which I

estimate to average almost $1 million per year over the next several years) and then adjusts rates for changes in per-customer sales revenues.

Q. Staff witness Jing Liu relies on Exhibit JL-4 to conclude that it costs $476 to $518 each year to serve a new residential customer. Are those figures accurate?

A. No, they are not. I explained above (and showed on Exhibit SJR-11) that those figures include rate base associated with main extensions that serve non-residential customers. Indeed, if the figures from Exhibit JL-4 were used, one would conclude that it is reasonable to spend in excess of $10,000 to extend service to a single residential customer.[13] Such an investment would be unreasonable, and, more importantly, it does not represent what the Company actually spends to connect a new residential customer. I showed above that the real cost to connect a new customer is only about $1,300.

Moreover, as shown in Exhibit JL-3, the Company has included a significant increase in administrative and general expenses ("A&G"). Between 2013 and 2018, the amount of A&G purportedly doubled -- from $4.3 million to $8.4 million -- even though the customer base increased by 15 percent. I did not investigate the Company's revenue requirement, but it appears that something happened during 2018 to greatly increase A&G expenses. Since most of the customer growth occurred prior to 2018 (Exhibit JL-3 shows that more than 8,500 customers were added between 2013 and 2017; approximately 2,800 were added from 2017 to 2018), I would not expect the A&G increase between 2017 and 2018 to be related solely to customer growth in that year.

[13] I show on Exhibit SJR-11 that if the mainline expansion projects solely served the residential customers shown in Exhibit JL-4, the average cost from 2013 to 2018 would be between $10,000 and $26,000 per customer.

Further, I note that most of the A&G increase between 2013 and 2018 occurred in the last year (increasing from $5.97 million in 2017 to $8.41 million in 2018).

Q. What do you conclude about Staff's analysis based on Exhibits JL-3 and JL-4?

A. In my opinion, it is not appropriate to draw conclusions about the reasonableness of a decoupling mechanism from the data in Exhibits JL-3 and JL-4. Analyzing the data as I did in Exhibits SJR-11 and SJR-13 shows that per-customer decoupling for this Company at this time would result in unjust and unreasonable rates that create a multi-million-dollar windfall to the Company.

Q. Do the Settlement's proposed earnings sharing mechanism and five percent limit on annual rate increases (the so-called "soft cap") cure the defects in per-customer decoupling for the Company at this time?

A. No. The earnings sharing mechanism does not prevent the Company from over-earning or prevent customers from paying rates that are unjust and unreasonable. It only serves to impose some limit on the extent to which rates are unreasonably high. Further, the five percent soft cap does not restrict the Company from increasing rates in total; it only limits the amount of increase that can be imposed in one year. Any amounts in excess of the soft cap are deferred to future years and can result in higher rate increases in the future. Thus, while the soft cap and earnings sharing mechanism provide some protection for ratepayers, I conclude that neither of these approaches makes per-customer decoupling reasonable for the Company at this time. I showed above that per-customer decoupling is likely to result in millions of dollars of unjustified rate increases when, in fact, rates should be declining due to the extensive growth planned by the Company.

IV. CONCLUSION AND RECOMMENDATIONS

Q. What do you conclude?

A. In light of the Company's significant growth projections and other facts I discuss above, I conclude that per-customer decoupling would not result in just and reasonable rates for the Company. Evidence from several data sources -- most importantly including the Company's own consumption data for more than 72,000 residential customers for the test year -- demonstrates that customers in new housing use significantly less natural gas than customers in older housing. This fact coupled with the level of growth anticipated by the Company results in per-customer decoupling causing unreasonable significant increases in residential rates even if consumption is exactly as one would expect. I estimate that implementing per-customer decoupling during such a high-growth period would result in windfall revenues to the Company -- a return that may be twice the level of a reasonable return on that new investment.

I also conclude that using rate class decoupling would insulate the Company from potential downturns in consumption while still providing some return on the incremental investment made to serve new customers.

Q. What do you recommend?

A. Given the Company's current circumstances, if the Commission decides to allow the Company to implement a decoupling mechanism for residential customers, the decoupling should occur on a total-sales basis for the Residential class (rate class decoupling). Any decoupling mechanism should include the five percent soft cap that limits the magnitude of annual rate increases, as well as an earnings sharing mechanism. In the Company's specific circumstances -- particularly its growth projections and

Company data showing the dramatic change in water heating technology used by new customers (as well as other factors that lead to decreased consumption by new customers) -- it would be grossly unfair and unreasonable to implement per-customer decoupling at this time. Decoupling based on revenues per customer would lead to unreasonable rate increases for customers and create a multi-million-dollar windfall and excessive returns for the Company.

Q. Does this conclude your direct testimony?

A. Yes, it does.