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May 31, 2024

Via Electronic Filing

OREGON PUBLIC UTILITY COMMISSION ATTENTION: FILING CENTER
PO BOX: 1088
SALEM OR 97308-1088

RE: Docket No. UG 490 – In the Matter of NORTHWEST NATURAL GAS COMPANY, dba NW NATURAL, Request for a General Rate Revision.

The Public Utility Commission of Oregon Staff (Staff) submits for filing the enclosed errata to the Opening Testimony of Staff Witness Matt Muldoon, Exhibit Staff/100.

This errata contains the following updates:
Updated are Staff/100 Muldoon/14 Lines 3-5;
Staff/100 Muldoon/20 Table 7 at line 4; and
Staff/100 Muldoon/29 Table 10 at line 10.
The updated Table 10 now explains how the numbers from CBO were used.

Mark Brown
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CASE: UG 490
WITNESS: Matt Muldoon

PUBLIC UTILITY COMMISSION
OF
OREGON

STAFF EXHIBIT 100

REDACTED
OPENING TESTIMONY
Overview and Return on Equity
Subject to Protective Order No. 23-480

April 18, 2024

Q. Please state your name, occupation, and business address.

A. My name is Matt Muldoon. I am a manager employed in the Accounting and Finance Section of the Rates, Safety and Utility Performance Program (RSUP) of the Public Utility Commission of Oregon (OPUC). My business address is 201 High Street SE, Suite 100, Salem, Oregon 97301.

Q. Please describe your educational background and work experience.

A. My witness qualifications statement is found in Exhibit Stipulating Parties/101.

Q. What is the purpose of your testimony?

A. I introduce Staff-sponsored adjustments and issues regarding the Northwest Natural Gas Company (NW Natural, NWN, or Company) request for a general rate revision, docketed as Docket No. UG 490 and articulate some of Staff's overarching concerns regarding the frequency and aggregate magnitude of the Company's proposed increases in this rate case and in recent years. I also address NW Naturals Pensions and Post Retirement Medical Expenses, Cost of Capital components and overall Rate of Return (ROR), going into greater detail regarding Return on Common Equity (ROE).

Further detail on Capital Structure is found in Rose Pileggi's testimony in Exhibit Staff/1200. NW Natural's cost of Long-Term Debt is addressed in a Stipulation executed by Staff and other parties.[1]

Q. Are other Staff witnesses submitting testimony?

A. Yes. Each Staff assigned to Docket No. UG 490 is submitting separate testimony. My testimony introduces the Staff witnesses and their respective

[1] See Stipulating Parties/100, Kravitz, Muldoon, Jenks, Mullins/1-6.

assignments and estimates the revenue requirement impact of Staff recommended adjustments to the Company's initial filing. Additional detail about revenue, expense, and rate base components of Staff's proposed adjustments is found in Luz Mondragon's testimony in Exhibit Staff/200. The issues identified in Staff testimony are those identified to date. Staff's recommendations and issues may change when informed by new data and after reviewing testimony and analysis by other parties.

Q. How is your testimony organized?

A. My testimony is organized as follows:

Q. Did you prepare exhibits for this docket?

A. Yes. In addition to my witness qualifications statement, I prepared the following exhibits:

Other Supporting Exhibits

Exhibit Staff/101 .. ROE – Peer Screen, Dividends, EPS, Hamada Adjustments
Exhibit Staff/102 ..... ROE - Three Stage DCF Modeling
Exhibit Staff/103 ..... ROE - Three Stage DCF Modeling Results
Exhibit Staff/104 ..... ROE – Capital Asset Pricing Model (CAPM)
Exhibit Staff/105 ..... ROE – Gordon Growth, Single Stage DCF
Exhibit Staff/106 ..... ROE – US BEA Historical GDP Growth
Exhibit Staff/107 ..... ROE – TIPS Implies Inflation
Exhibit Staff/108 ..... Value Line (VL) Natural Gas and Water Utilities
Exhibit Staff/109 ..... Financial News Investors Are Seeing

1. REVENUE REQUIREMENT IMPACT BY STAFF TOPIC

Q. Please provide a list of the rate case topics that Staff reviewed and introduce the responsible Staff.

A. See Table 1 below:

TABLE 1 – STAFF RATE CASE TOPICS

Staff Issues Summary Table - ($000) for Test Year Ending October 31, 2025					
Total Incremental Revenue Requirement on the Company's Filed General Rate Case				**$154,913**	**$154,913**
Exhibit	**Issue**	**Staff**	**Staff Issues and Proposed Adjustments**	**Revenue Requirement @ROE 8.9%**	**Revenue Requirement @ROE 9.3%**
100	1	Muldoon	Introduction	-	-
	2		Concerns	-	-
	3		Return on Equity (ROE) - **Range** (**Floor to Ceiling**)	**(18,819)**	**(12,770)**
	4		Pensions and Post Retirement Medical Expense	-	-
	5		Physical and Cyber Security	-	-
200	1	Mondragon	Revenue Requirement Summary	-	-
	2a		Customer Service(CS) , and Operations and Maintenance (O&M) Non-Labor (NL)	(11)	(11)
	2b		Sales Expense Dealer Relations	(88)	(88)
	2c		Sales Expense, Consumer Price Index (CPI) Adjustment	(6)	(6)
	3		ARAM Excess Deferred Income Tax (EDIT)	(140)	(140)
	4		Interest Synchronization	-	-
	6		Budget to Actuals	-	-
300	1	Scala	Energy Justice Overview	-	-
400	1	Nottingham	Overview of Public Comments Received to Date	-	-
	2		How Falling Natural Gas Prices Can Help NWN Customers	-	-
500	1	Abraham	Gas Storage Operating Expense	(275)	(275)
	2		Gas Storage in Rate Base	-	-
	3		New Major Gas Storage Projects	-	-
600	1	Anderson	Utility Plant in Service	-	-
	2		Gains on Sale of Utility Property	-	-
	3		Test Year Rate Base, Discrete vs Non Discrete Investments	-	-
	4		New Major Plant Distribution Projects North Coast Feeder B	**(601)**	**(619)**
	5		New Plant - Resource Centers	-	-
	6		Attestations and Other Project Adjustments	-	-
700	1	Beitzel	Non-Medical Insurance and Risk	-	-
	2		Directors and Officers (D&O) Insurance (**CONFIDENTIAL**)	**XXXXXX**	**XXXXXX**
800	1	Chipanera	Escalations	-	-
	2		Cash Working Capital	**(45)**	**(46)**
	3		Regulatory Fees	194	194
	4		Income Taxes	-	-
	5		Leasehold Improvements	-	-
	6		Other Related Topics	-	-
900	1	Dlouhy	Climate Protection Program (CPP)	-	-
	2		Renewable Natural Gas Automatic (RNG) Adjustment Clause (AAC)	-	-
	3		Residential Line Extension Allowance (LEA)	-	-
	4		Meter Modernization Program (MMP)	**(814)**	**(841)**

Continued on Next Page

Concluded

1000	1	Dyck	Information Technology and Security (IT&S) projects, and Cloud-Based Software - Genesis Contingency	**(319)**	**(329)**
	2a		A&G Expense NL, Office Supplies & CPI Adjustment	(975)	(975)
	2b		Admin. Expenses with CPI Adjustment	147	147
	2c		Shareholder Meeting with CPI Adjustment	(287)	(287)
	2d		Rents with CPI Adjusments	(43)	(43)
1100	1	Kim	Long-Term Natural Gas Price Hedging	-	-
	2		Schedule H	-	-
1200	1	Lockwood	Uncollectible Accounts	(2,926)	(2,926)
	2		NW Natural's Bill Discount Program	-	-
1300	1	Moore	Distribution O&M Expense	(6,371)	(6,371)
	2		Materials and Supplies	**(352)**	**(363)**
	3		Customer Accounts	(2,184)	(2,184)
	4		Affiliated Interests	-	-
	5		Atmospheric Testing	-	-
1400	1	Peng	Depreciation Expense	-	-
	2		Ammortization Expense	-	-
	3		Depreciation Reserve	-	-
	4		Ammortization Reserve	-	-
	5		Allowance for Funds Used During Construction (AFUDC)	-	-
1500	1	Peterson	Current Medical and Health Insurance	(542)	(542)
	2		Current Pension Costs	-	-
1600	1	Pileggi	Capital Structure	-	-
1700	1	Rossow	Political Activities and Office Supplies	(12)	(12)
	2		Advertising	(169)	(169)
	3		Memberships Dues and Donations	(499)	(499)
	4		Meals, Entertainment and Travel	(364)	(364)
1800	1	Shierman	Marginal Cost	-	-
	2		Rate Spread	-	-
	3		Rate Design	-	-
1900	1	Stevens	Load Forecasting	-	-
	2		Decoupling	-	-
	3		Rate Base Calculations	-	-
2000	1a	Yamada	Wage and Salaries (W&S) - O&M	(6,657)	(6,657)
	1b		W&S Capital	**(279)**	**(288)**
	2		Incentives	-	-
	3		Full Time Equivalents (FTE)	-	-
	4		Related Issues	-	-
2100	1	Hennessy	Safety and Insepction Programs	-	-
Total Staff Proposed Adjustments (Base Rates) (**CONFIDENTIAL**):				**XXXXXX**	**XXXXXX**
Staff-Calculated Revenue Requirements Change (Base Rates) (**CONFIDENTIAL**):				**XXXXXX**	**XXXXXX**

2. INTRODUCTION TO OTHER STAFF'S OPENING TESTIMONY

Q. Please describe the opening testimony submitted by Staff in this rate case.

A. The Staff exhibit number, respective Staff witness, and topics published on this date are presented below.

Topics addressed in Opening Testimony published April 18, 2024:

In **Exhibit 200, Luz Mondragon**, Senior Financial Analyst, reviews revenue requirements, customer service sales expense, operations and maintenance (O&M) non-labor (NL), excess deferred income taxes, interest synchronization, and budget to actuals.

In **Exhibit 300, Michell Scala**, Energy Justice Program Manager, provides an Energy Justice overview for this general rate case and discusses energy justice foci.

In **Exhibit 400, Melissa Nottingham** summarizes public comments received by the Commission as of March 12, 2024. She also provides an overview of how falling natural gas commodity costs may help control costs in another rate proceeding outside this general rate case: the Company's annual Purchase Gas Adjustment (PGA); and in aggregate reduce total rate increases for changes effective November 1, 2024.

In **Exhibit 500, David Abraham**, Senior Economist, discusses the Company's gas storage operating expense, gas storage in rate base, and new major storage gas projects.

In **Exhibit 600, Laurel Anderson**, Senior Financial Analyst, discusses utility plant in service, gains on sale of utility property, test year rate base discrete vs, non-discrete investments, new plant major distribution projects, new plant resource centers, attestations, and Staff-proposed project adjustments.

In **Exhibit 700 Russ Beitzel**, Program Manager of the Rates and Telecommunications Section reviews non-medical insurance and risk, and Directors and Officers (D&O) insurance.

In **Exhibit 800, Itayi Chipanera**, Senior Financial Analyst, discusses escalations, cash working capital, regulatory fees, income taxes, leasehold improvements, and related topics.

In **Exhibit 900, Dr. Curtis Dlouhy**, Senior Economic and Policy Analyst, reviews NW Natural's proposals regarding the Climate Protection Program (CPP), Renewable Natural Gas Automatic (RNG) Adjustment Clause (AAC), Residential Line Extension Allowance (LEA), and Meter Modernization Program (MMP).

In **Exhibit 1000, Julie Dyck**, Senior Economist and Utility Analyst, reviews NW Natural's information technology and security (IT&S) projects, cloud-based software, and A&G (NL) expense.

In **Exhibit 1100, Anna Kim**, Energy Costs Section Manager, reviews the Company's Long-Term Hedging, and Schedule H.

In **Exhibit 1200, Charles Lockwood**, Utility Analyst, analyzes uncollectible accounts, and the Company's bill discount program.

In **Exhibit 1300, Mitch Moore**, Senior Utility Analyst, analyzes distribution O&M expense, materials and supplies, customer accounts, affiliated interests, and the Company's atmospheric testing.

In **Exhibit 1400, Ming Peng**, Senior Economist, analyzes depreciation expense, amortization expense, depreciation reserve, amortization reserve, and Allowance for Funds Used During Construction (AFUDC).

In **Exhibit 1500, Nicola Peterson**, Senior Telecom Analyst, analyzes current medical and health insurance, and Current Pension Costs.

In **Exhibit 1600, Rose Pileggi**, Senior Utility Analyst, analyzes NW Natural's capital structure.

In **Exhibit 1700, Paul Rossow**, Utility Analyst, reviews NW Natural's expense related to political activities, advertising, memberships, dues, donations, meals, entertainments, and travel.

In **Exhibit 1800, Eric Shierman**, Senior Utility Analyst, analyzes NW Natural's marginal cost, rate spread, and rate design.

In **Exhibit 1900, Dr. Bret Stevens, Ph.D.**, Senior Economist, analyzes the Company's load forecasting, decoupling, and rate base calculations.

In **Exhibit 2000, Steph Yamada**, Senior Utility Analyst examines NW Natural's wages and salaries, incentives, full time equivalents (FTE), and other related issues.

In **Exhibit 2100, Kervin Hennessy**, Senior Utility Analyst examines NW Natural's safety and inspection programs.

3. CONCERN – FREQUENCY AND AGGREGATE AMOUNT OF INCREASES

Q. Are there any issues that appear in the case that you would like to highlight?

A. Yes. Staff is concerned that the aggregate rate impacts of this general rate case, deferrals, and power costs may constitute an unreasonably energy burden for NW Natural's Oregon utility customers outpacing Oregon wages. According to the Wall Street Journal (WSJ), necessities like food have become much more expensive in recent years.[2] Further, the U.S. Federal Reserve (Fed) is tightening monetary policy to control high inflation.[3] This increases the cost of borrowing for utility rate payers as well as the cost of debt for utilities.

Q. Can you give a general idea of the mindset you would prefer NW Natural executives avoid when considering cost controls and capital project best management practices?

A. Yes. In the news articles cited above, some food company executives have said that "shoppers will adjust over time to higher prices, as they have in the past". This mind set presumes that consumers of goods and services who have finite resources will either consume less or otherwise shift their spending to deal with higher prices on necessities.

While energy efficiency is generally praiseworthy, Staff expects utility leadership to control costs to the extent practicable throttle the frequency and

[2] See Exhibit Staff/109 Muldoon/21 for "It's Been 30 Years Since Food Ate Up This Much of Your Income" by Jesse Newman and Heather Haddon of the WSJ – Feb 26, 2024. Also see Exhibit Staff/109 Muldoon/22 for "How Far $100 Goes at the Grocery Store After Five Years of Food Inflation" by Stephanie Stamm and Jesse Newman of the WSJ – April 4, 2024.

[3] See Exhibit Staff/109 Muldoon/26 for Fed activity on interest rates.

amount of rate increase, and to avoid the presumption that if energy prices rise faster than wages, they utility customers will just need to "adjust" to that new reality.

Q. Please show the approximate impact on residential customer rates were the Company's rate increase implemented as requested.

A. Staff cautions that it is still early in this proceeding and the following depiction reflects a point estimate prior to Staff's filing its Opening Testimony:

Table 2

Current Residential	Avg. Useage/Mo.	Residential Avg. Basic Charge $/Mo.	Residential Avg. Bill $/Mo.
Single Family	55	$ 8.00	$ 79.43
Multi-Family	55	$ 8.00	$ 79.43

	Nov. 1, 2024 Increase	Scenario if increase were $154.9 M*			
NWN Proposed [1]		New Residential Basic Charge $/Mo.	New Residential Avg. Bill $/Mo.	Increase $/Mo	% Increase
Single Family	$154.9 Million*	$ 10.00	$ 93.81	$ 14.38	18.10%
NP Single Family		$ 26.25	$ 66.54	n/a	n/a
Multi-Family		$ 8.00	$ 91.82	$ 12.39	15.60%
NP Multi-Family		$ 24.25	$ 63.92	n/a	n/a

* Oregon jurisdictional revenues overall increase of 16.62 percent

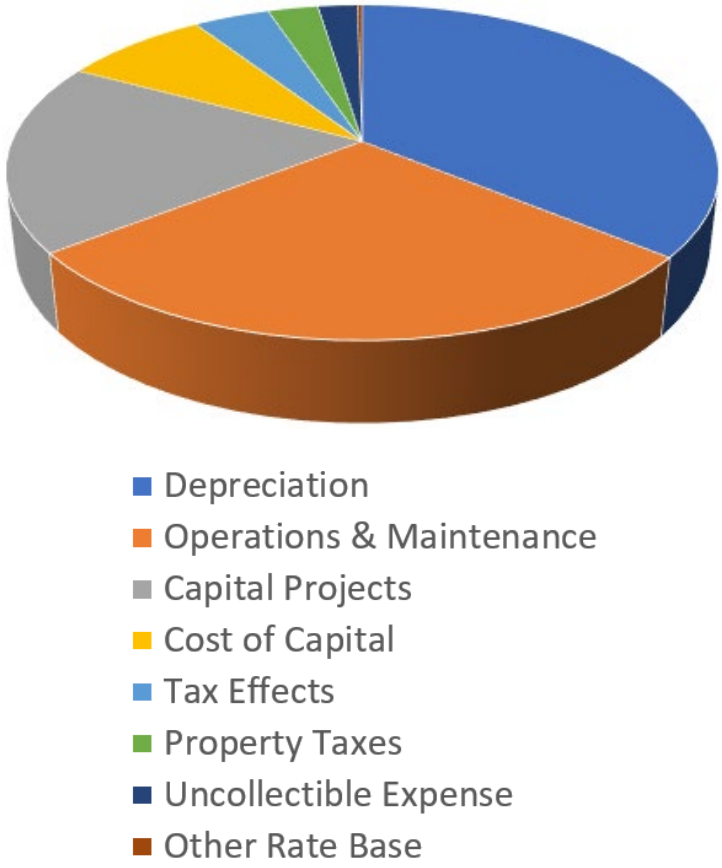
[1] Margin revenues for existing and **new premise** (NP) were designed to generate an equal amount. Monthly bill is driven by usage differences.

This information does not yet reflect recommendations offered by Staff and intervenors for Commission consideration, which if adopted, would reduce the impact of NW Natural's proposed rate increase.

Q. What does the Company identify as key cost drivers when describing this rate case to investors and analysts?

A. With the caution that this is at a very general level, and importantly without showing NW Natural's offsetting revenues and cost controls, the largest drivers of costs in this general rate increase are shown below.

Table 3



Cost Drivers	%
Depreciation	35.92%
Operations & Maintenance	28.57%
Capital Projects	18.36%
Cost of Capital	7.90%
Tax Effects	4.12%
Property Taxes	2.72%
Uncollectible Expense	2.14%
Other Rate Base	0.26%
	100.00%

Rate Case Cost Drivers	Approximate NWN Proposed Oregon Revenue Requirement	
	$ Millions	Percent
Driver 1: Capital Projects [1] (Examples Below) Current Rate Base $1,755,679 Million (UG 435); Proposed Rate Base $2,136,361 million	**32,948**	21.27%
Central Resource Center	788	0.51%
Meter Modernization	4,559	2.94%
Incremental Cloud Capital (replace end of life software)	3,100	2.00%
Storage Investments for Winter Peak	4,765	3.08%
Other	19,736	12.74%
Driver 2: Cost of Capital (as requested) 10.1% ROE, 50% Equity, 4.712% Cost LT Debt	**14,167**	9.15%
Driver 3: Depreciation	**64,453**	41.61%
Depreciation Study	35,403	22.85%
Increased Capital	29,050	18.75%
Driver 4: O&M	**51,273**	33.10%
2 Years of Wages and Salaries	19,389	12.52%
Customer Payment Processing	1,333	0.86%
Locating Services	2,997	1.93%
IT&S (software licenses)	4,650	3.00%
Other (inflationary pressures across all costs)	22,904	14.79%
Driver 5: Gross Up	**7,401**	4.78%
Federal Income Taxes	1,151	0.74%
State Income Taxes	1,073	0.69%
Franchise Taxes	4,572	2.95%
Corporate Activity Tax	605	0.39%
Driver 6: Uncollectible Expense	**3,848**	2.48%
Driver 7: Property Taxes	**4,888**	3.16%
Driver 8: Other Rate Base	**463**	0.30%
Driver 9: Revenue (net of Cost of Gas)	**-24,531**	-15.84%
Customer Growth	-24,531	-15.84%
Total	**154,910**	100.00%

Staff's testimony will provide more detail on the above costs. Note that the information above does not capture all the Company's tax offsets and offsetting operating revenues as well as cost controls that reduce the impact to customers rates.

Q. What could the Commission do to address general rate increases of the magnitude proposed by NW Natural in this general rate case?

A. One solution proposed by Bob Jenks of the Oregon Citizens' Utility Board (CUB) on that organization's website is for the Commission to set the utility's profit margin at the lowest reasonable point.[4]

Q. Does Staff agree with CUB that this is the Commission's best option?

A. Staff analyzing Cost of Capital (CoC) in this general rate case would not use terms like "allowable profit margins" interchangeably with allowed Return on Equity (ROE). Staff also think holistically about Cost of Capital considering credit ratings and the financial health of Commission jurisdictional energy utilities and their relative strength in financial markets in comparison to their peer or similarly situated like utilities.

However, in advance of reading any testimony by CUB in this general rate case, Staff agrees that the Commission could consider any ROE in Staff's range of reasonable ROE's for Commission Authorized ROE in its final order in this general rate case.

Q. Are there other ways that the Commission could look at using ROE to mitigate the magnitude and frequency of general rate cases?

A. Yes. The Commission could consider using ROE as a throttle to control the frequency of general rate cases. For example, were a utility to file three

[4] Posted January 25, 2024, on https://oregoncub.org/ this proposal within "Is Oregon Utility Regulation Part of the Problem?" by Bob Jenks is reproduced with some small editing changes to fit a written rather than on-screen format at Exhibit Staff/109 Muldoon/13 to capture the context in which the suggestion was made. Also see Exhibit Staff/109 Muldoon/14-16.

general rate cases in a five-year period, the Commission might consider that activity sufficient to reduce regulatory lag and reduce financial risk in terms of metrics like ratio of cash flow from operations before changes in working capital (CFO pre-WC) to debt, in a form meaningful to credit rating agencies.

Q. Would that last approach be immediately applicable in this general rate case?

A. That is uncertain. Persons concerned about the frequency and aggregate magnitude of energy utility rate increases in Oregon are sharing ideas on possible solutions. Consideration of recommendations raised in this general rate case could give the Commission tools to mitigate the impact of frequent rate cases on jurisdictional utility customers. Staff will continue to monitor suggestions on intervenors in this case and closely review the analysis and justifications provided to support such recommendations to the Commission.

The Commission's evaluation of such proposals is consistent with public comments and posting by intervenors asking that the Commission consider impacts on utility customers in its determination of most appropriate just and reasonable outcomes in this case.

Q. Are utility customers helped by falling natural gas prices?

A. Yes. Please see Exhibit Staff/400 Nottingham's discussion of how natural gas prices falling in the first quarter of this year could help control Purchase Gas Adjustment (PGA) and rate case aggregate rate changes on November 1.[5]

[5] NYMEX Natural Gas Prices fell 29.87 percent in the first quarter of 2024. See Exhibit Staff/109, Muldoon/44, "Track the Markets: Quarterly Winners and Losers" published in the Wall Street Journal on April 1, 2024.

4. OVERALL RATE OF RETURN (ROR)

Q. What did NW Natural include in its initial filing for its overall Rate of Return?

A. The Company. proposes a rate of return of 7.406 percent, with a capital structure comprised of 50 percent equity and 50 percent debt, a 4.712 percent cost of debt, and a 10.10 percent return on equity.

Q. Did you prepare tables showing NW Natural's current Commission-authorized, Company-filed, and Staff-calculated RORs?

A. Yes. The following three tables provide that information.

TABLE 4

NWN Current OPUC Authorized (UG 435 Order No. 22-388, 22-437)			NWN
Component	**Percent of Total**	**Stipulated or Implied Cost**	**Weighted Average**
Long-Term Debt	50.0%	4.271%	2.136%
Preferred Stock	0.0%	0.0%	0.000%
Common Stock	50.0%	9.40%	4.700%
	100.00%	**ROR**	**6.836%**

TABLE 5[6]

NWN Requested – UG 490		NWN Direct Testimony		
Component	**Percent of Total**	**Cost**	**Weighted Average**	**ROR vs. Current**
Long-Term Debt	50%	**4.712%**	2.356%	**0.571%**
Preferred Stock	0%	0.0%	0.000%	
Common Stock	50%	**10.10%**	5.050%	
	100.00%	**ROR**	**7.406%**	

[6] NW Natural/300, Wilson/3.

TABLE 6

Staff Proposed – UG 490		Staff Opening Testimony		
Component	**Percent of Total**	**Cost**	**Weighted Average**	**ROR vs. Current**
Long-Term Debt	**50.00%**	**4.712%**	2.356%	**0.070%**
Preferred Stock	0%	0.0%	0.000%	
Common Stock	**50.00%**	**9.10%**	4.550%	
	100.00%	**ROR**	**6.906%**	

CAPITAL STRUCTURE

Q. Has the Commission recently considered a preferred target capital structure?

A. Yes. In PacifiCorp's 2020 GRC, the Commission adopted a notional 50 percent equity capital structure. The Commission noted that "[w]e consider all components to the company's cost of capital that will result in a fair and reasonable rate of return, 'to strike a balance between the interests of ratepayers and the interests of investors [,]" and that 50/50 capital structure was an optimal structure for ratemaking.[7]

Q. Does NW Natural continue to target a 50 percent Common Equity / 50 percent LT Debt capital structure?

A. Yes.[8] See Staff/1600 Pileggi for further discussion on capital structure.

COST OF LONG-TERM DEBT

Q. Did parties address Cost of Long-Term Debt in a partial settlement?

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[7] *In the Matter of PacifiCorp, dba Pacific Power, Request for a General Rate Revision*, UE 374, Order No. 20-473, p. 24 (December 18, 2020).

[8] See NW Natural/300, Wilson/3.

A. Yes. As earlier mentioned in this testimony NW Natural, Staff, the Alliance of Western Energy Consumers, and CUB recommend the Commission adopt a 4.712 percent Cost of Long-Term Debt.

5. RETURN ON EQUITY (ROE)

Q. What range of reasonable ROEs does Staff recommend, and within that range, what point ROE?

A. Staff observes a range of reasonable ROEs of 8.9 percent to 9.3 percent, with a mean ROE of 9.1, derived from Staff's two separate Three-Stage Discounted-Cash-Flow (DCF) models. Staff does not have a recommended point ROE estimate in this case, which is a departure from its typical practice.

Q. Did you perform a check on the results of Staff's Three-Stage DCF models?

A. Yes. Staff employed two simpler models to check the reasonableness of its findings:

1. A Single-Stage DCF or Gordon Growth Model; and,
2. A Capital Asset Pricing Model (CAPM).

Q. What results did these models generate?

A. The Gordon Growth Model generated a mean ROE of 7.5 percent using Staff's peer electric utilities and 7.7 percent with the Company's peer electric utilities. This model points to the lower end of Staff's three-stage discounted cash flow results.

The CAPM using Staff's usual inputs and methodology generated a mean ROE of 9.2 percent using Staff's peer electric utilities and 9.3 percent with the Company's peer electric utilities. This model supports an ROE at the middle to high end of Staff's three-stage discounted cash flow results.

Based on these checks, Staff utilizes the midpoint estimate of 9.1 percent

for ROE in Table 6 above. However, any point within Staff's range of reasonable ROEs from 8.9 percent to 9.3 percent (rounded up) would be support of a just and reasonable ROE.

Q. Does your recommended ROE meet appropriate standards?

A. Yes. The range or reasonable ROEs Staff recommends is appropriate for overall rates that are reflective of forward looking conditions in conjunction with Staff's adjustments and meets the *Hope* and *Bluefield* standards, as well as the requirements of Oregon Revised Statute (ORS) 756.040.[9] Staff recommendations are consistent with establishing "fair and reasonable rates" that are both, "commensurate with the return on investments in other enterprises having corresponding risks" and "sufficient to ensure confidence in the financial integrity of the utility, allowing the utility to maintain its credit and attract capital."[10] However, a higher point within Staff's range would be more supportive of current NW Natural credit ratings and financial market expectations.

PEER SCREEN

Q. How did you select comparable companies (peers) to estimate NW Natural's ROE?

A. Staff used companies that met the following criteria as peer utilities to the regulated electric utility activities of NW Natural:

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[9] *See Federal Power Commission v. Hope Natural Electric Co*., 320 U.S. 591 (1944) and *Bluefield* Water *Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923).

[10] *See* ORS 756.040(1)(a) and (b).

1. Covered by Value Line (VL) as an electric utility;
2. Forecasted by VL to have positive dividend growth;
3. LT Issuer Credit Rating greater than or equal to Baa3 from Moody's and greater than or equal to BBB- from S&P;[11]
4. No decline in annual dividend in last five years based on VL;
5. Has heavily regulated electric utility revenue;
6. Has LT Debt from 40 percent to 60 percent inclusive in VL Capital Structure; and[12]
7. Has no recent merger and acquisition activity representing a large portion of the utilities capitalization.[13]

Q. What peer groups of electric utilities did Staff and Company ROE modeling primarily depend on, and were there similarities?

A. The Company and Staff recommended regulated natural gas utility peer groups both drew from pertinent electric utilities covered by VL and with one exception, chose the same peer group. Staff did not select New Jersey Resources Corporation based on how much of its operational cash flows are regulated and that the credit rating coverage for the Company was withdrawn by Moody's and Standard & Poor's. Otherwise Table 7 shows the overlap between NW Natural's and Staff's peer groups.

Q. Did the Company apply some different criteria?

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[11] See Exhibit Staff/101 Muldoon/1 for a table showing how Moody's and S&P ratings compare with each other.

[12] Staff also performs sensitivity analysis looking at a peer screen of 40 percent to 60 percent long-term debt in capital structure. Sensitivity analysis does not impact Staff's modeling results but does answer questions looking at alternative inputs and scenarios.

[13] See Staff/109, Muldoon/36-39 for examples of financial news on mergers monitored by Staff.

A. Yes. However, there was much overlap between NW Natural's and Staff's screening criteria. For example neither Staff nor NW Natural chose UGI Corporation as it primarily sells propane rather than natural gas.

TABLE 7[14]

Abbreviated Utility	UG 490 Company	UG 490 Staff
Atmos	Yes	Yes
Chesapeake	No	No
New Jersey	Yes	No
NiSource	Yes	Yes
NW Natural	Yes	Yes
ONE Gas	Yes	Yes
South Jersey	No	No
Southwest Gas	Yes	Yes
Spire	Yes	Yes
UGI	No	No

A comparison of the peer groups used by Staff and NW Natural are set forth in Table 9 above. Staff excluded some of the companies used by NW Natural based on the Staff screening criteria described above. Six companies were relied upon by both Staff and NW Natural.

Q. Is the set of Natural Gas utilities followed by Value Line relatively small.

A. Yes. Staff is also doing sensitivity modeling so that the Commission can consider over time whether publicly traded water utilities should be considered in the future as a second combined water and natural gas utilities peer group for a second set of recommendations regarding ROE. In this publication Staff

[14] See Exhibit Staff 102, Muldoon/2 for the full peer screening table.

just upgraded its natural gas utility information to bring its recommendations current with financial markets. Unfortunately Value Line has not yet made its forward-looking updates for water utilities so readers will have to wait for Staff's Rebuttal Testimony to see that modeling. However, because water utility information and modeling are provided only as a sensitivity and will not impact or change Staff's recommendations.

Q. Does NW Natural also offer a larger second peer group for the Commission's consideration?

A. Yes. NW Natural offers select electric utilities as a potential way to expand its natural gas peer group.[15] While Staff does not think this approach is informative for the Commission, the Company is considering ideas on how to address the relatively small group of publicly traded natural gas companies that are like NW Natural.

Bringing such ideas to the Commission may be helpful over the long run. The Commission may not have a best approach in mind now, but then again might not know exactly what it would like to see until it sees it.

MODEL RESULTS

Q. What are the results of your multistage DCF models?

A. See Table 8 below for the results from Staff's Three-Stage DCF modeling.

[15] See NW Natural/400 Coyne-Nelson/22 Figure 6.

TABLE 8 – RESULTS OF STAFF'S 3-STAGE DCF MODELING[16]

8.9%	to	9.3%
Midpoint	9.1%	ROE

Supporting Exhibit Staff/403, Muldoon/1 shows step-by-step how Staff's Hamada adjusted[17] Three-Stage DCF modeling, using Staff peers and growth rates, generates a higher recommended ROE than using NW Natural's peer electric utility group. Note that Staff rounds upward to generate a top of range value of 9.3 percent.

Q. Does Staff agree with the NW Natural's assertion that the Company's requested ROE of 10.1 percent is reasonable?

A. No. NW Natural comes up with a range of 10.0 percent to 10.6 percent with a recommended point estimate of 10.10 percent.[18] This is a very interesting range as most of the Company's similarly situated and sized (in terms of capitalization) utilities have ROE's authorized within the last two years that are below even the lowest point of this range. According to Regulatory Research Associates (RRA), an affiliate of S&P, the average ROE authorized for electric utilities rose to 9.54 percent for rate cases decided in 2022 from the 9.38 percent average for cases decided in 2021.[19]

16 See Exhibit Staff/103, Muldoon/1 for the results of Staff three-stage DCF modeling.
17 As Staff explains in more detail below, Staff applies the Hamada equation to better compare companies with different capital structures.
18 See NW Natural/403, Coyne-Nelson/1.
19 See Exhibit Staff/109, Muldoon/1 for Average Authorized ROEs in 2023 by Lisa Fontanella, RRA.

Staff invites the Company to explain further in its Reply Testimony why its results exceed recent state commission authorized ROE's for its modeling peers.

Q. Based on the information you have reviewed can you explain why NW Natural's results appear unreasonably high?

A. Yes. NW Natural inputs unreasonably high assumptions regarding future markets into its financial models. These unreasonably high assumptions, coupled with the relatively simple nature of the models relied on most heavily by NW Natural, leads inexorably to high estimates of what return is necessary to attract investors in today's market.

Q. Please provide an example of an extreme input used in the Company's modeling.

A. Example 1 below shows how important inputs are to ROE modeling. Looking at the difference between NW Natural and Staff inputs, one can see how use of an inflated market return can skew results upward.

Example 1 – NOT a Staff Recommendation:

NWN	4.42%	Rf Rate as shown in Exhibit NWN/400 Coyne-Nelson/13 @31
Opening	13.31%	NWN Mkt Return
Testimony	8.89%	NWN Mkt Risk Premium (MRP) as shown in Exhibit NWN/400 Coyne-Nelson/13 @30
Staff	4.555%	R_f as April 5, 2024 30 Yr UST Yields WSJ Bonds & Rates (wsj.com)
★	9.90%	S&P 500 Market Return 1993 thru 2023
	5.35%	Staff Mkt Risk Premium MRP)

Q. Please show a Capital Asset Pricing Model with Staff's and other more inflated inputs that may be preferred by the Company.

A. In Table 9 below, one can see how applying inputs from the table above to all the peer utilities changes ROE results of CAPM modeling.

Table 9 – Capital Asset Pricing Model (CAPM) Examples

	Screen #	Abbreviated Utility	UG 490 NWN	UG 490 Staff	UG 490 Staff Sensitivity	Ticker	VL Q1 2024 Beta	ROE w VL Beta CAPM	Screen #	
1	1	Atmos	Yes	Yes	Yes	ATO	0.85	9.10%	1	1
2	3	New Jersey	Yes	No	No	NJR	0.95	9.63%	3	2
3	4	NiSource	Yes	Yes	Yes	NI	0.90	9.37%	4	3
4	5	NW Natural	Yes	Yes	Yes	NWN	0.85	9.10%	5	4
5	6	ONE Gas	Yes	Yes	Yes	OGS	0.85	9.10%	6	5
6	8	Southwest Ga	Yes	Yes	Yes	SWX	0.90	9.37%	8	6
7	9	Spire	Yes	Yes	Yes	SR	0.85	9.10%	9	7
8	10	American Wa	No	No	Yes	AWK	0.95	9.63%	10	8
9	11	California Wa	No	No	Yes	CWT	0.75	8.56%	11	9
10	12	Middlesex W	No	No	Yes	MSEX	0.75	8.56%	12	10
11	13	SJW	No	No	Yes	SJW	0.85	9.10%	13	11
		No. of Peers:	7	6	10			VL Betas		
						Company Screen	Mean	9.3%	ROE	
					Staff Gas and Water Sensitivity Screen		Mean	9.1%	ROE	
						Staff Screen	Mean	9.2%	ROE	

CAPM points toward middle to upper end of Staff's 3 Stage DCF Modeling results.

Staff usually relies on a U.S. Treasury (UST) thirty-year bond as reported by the Wall Street Journal (WSJ) and 30-year monthly geometric returns for the Standard and Poor's (S&P) 500 index as a proxy for market returns. If one instead uses **an extreme arithmetic market return,** one can inflate the results of a CAPM model with few inputs.[20] One can also boost results by using a starting point for data collection in the Great Depression and then including World War II era boom times unlikely to be repeated in the U.S. economy.

Q. Is calculation of a market risk premium calculated from 1926-2003 a good predictor of future U.S. stock returns?

A. No. Since returns over the last thirty years are lower than those experienced earlier in the Country's history, which includes post-World-War II economic

[20] See Staff/104, Muldoon/1 for this CAPM modeling example.

expansion in the U.S, expectations should mirror the recent 30-year returns. According to Ibbotson, reliance on a date range like NW Natural's would overstate likely future market returns.[21]

Q. Is Staff suggesting that CAPM is not a good model to check results of other modeling Staff performs, as advised by the Commission?

A. No. Rather, Staff shows why the Commission accepts CAPM only as a check on ROE modeling and demonstrates how one can abuse the model. If one eliminates unreasonable modeling inputs, selects only peer electric utilities most like NW Natural using Staff's standard screening methods, and eliminates unreasonable inputs, you arrive at a result equal to Staff's ROE recommendations.[22]

STAFF MODELS

Q. Describe the two three-stage DCF models on which you primarily rely.

A. Staff's first model is a conventional three-stage discounted dividend model, which Staff denotes as a "30-year Three-stage Discounted Dividend Model with Terminal Valuation based on Growing Perpetuity" (referred to as "Model X"). This model captures the thinking of a money manager at a pension fund or insurance company, or other institutional investor, who expects to keep the Company's stock indefinitely and use the dividend cash flow to meet future obligations.

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[21] See "The Equity Risk Premium" by William N. Goetzmann and Roger G. Ibbotson available on Amazon.com.

[22] Exhibits Staff/101-105 show how Staff's recommendations are generated.

Staff's second model is the "30-year Three-stage Discounted Dividend Model with Terminal Valuation Based on P/E Ratio" (referred to as "Model Y"). This model best fits the investor who has a goal they are working toward. In addition to the income stream from dividends, this investor intends to sell the stock as the goal is reached.

Both models require, for each proxy company analyzed by Staff, a "current" market price per share of common stock, estimates of dividends per share to be received over the next five years calculated from information provided by Value Line, and a long-term growth rate applicable to dividends 10- to 30-years out. On this last point, Staff always recommends the Commission be particularly vigilant for any substitution of a short-term growth rate for a long-term 20- to 30-year growth rate. Some growth rates labeled "long" may be supported by information looking at the next ten years or less into the future.

For a smooth transition, Staff steps the rate of dividend growth between the near-term (the next five years) and that of long-run expectations.

Q. How does Model X calculate the terminal value of dividends as a perpetual cash flow into the future?

A. Model X includes a terminal value calculation, in which Staff assumes dividends per share grow indefinitely at the rate of growth in Stage 3 ("growing perpetuity"). In contrast, Model Y terminates in a sale of stock where the price is determined by our escalated price/earnings (P/E) ratio.

Q. Why is thirty years the primary horizon for financial decision-making?

A. Investors focus on the 30-year U.S. Treasury (UST) Bond against alternate investment opportunities. Thirty years is a generally accepted period for economists to ascribe to one generation. It is a common length of time for mortgages of plants, equipment, and homes. Many institutional holders of utility securities match the cash flows from utility dividends to future obligations, such as the payout of life insurance, preparing to meet future pension and post-retirement obligations, and interest service for borrowing. Individuals plan for the education of their children, ownership of their home, and provision for their retirement on this same multi-decade timeframe.

Staff uses five years for Stage One, as that is the timeframe for which Value Line estimates of future dividends are available. This is as far as Value Line projects near-future trends. Staff also uses five years for Stage Two as a reasonable length of time for individual company's dividend growth rates that are materially different from the growth rate used in Stage Three (and common to all companies) to converge to a LT dividend growth rate more representative of all electric utilities.

Q. How do you address dividend timing?[23]

A. Each model uses two sets of calculations that differ in the assumed timing of dividend receipt. One set of calculations is based on the standard assumption that the investor receives dividends at the end of each period.

The second set of calculations assumes the investor receives dividends

[23] See Exhibit Staff/108 for Value Line (VL) information relied on in this testimony regarding publicly traded natural gas and water utilities.

at the beginning of each period. Each model averages the unadjusted ROE values to generate an Internal Rate of Return (IRR) produced with each set of calculations for each peer utility. This approach accounts for the time value of money, closely replicating actual quarterly receipt of dividends by investors.

Q. What price do you use for each peer utility's stock?

A. Staff used the average of closing prices for each utility from the first trading day in February 2024, March 2024, and April 2024, to represent a reasonable snapshot of utility stock prices.

GROWTH RATES USED IN THIRD STAGE OF DCF MODELS[24,25]

Q. What long-term growth rates did you use in Staff's two three-stage DCF models?[26,27]

A. Staff used three different long-term growth rates, with different methods employed in developing each.

The first method uses the U.S. Congressional Budget Office's (CBO) 4.46 percent nominal 20-year GDP growth rate estimate.

Staff's second Composite Growth Rate applies a 20 percent weight to each of the following referent entities long-term growth rates: EIA, Organization for Economic Co-operation and Development (OECD), the U.S. Social Security

[24] See Exhibit Staff/106, Muldoon1 for BEA historical GDP growth rates.

[25] See Exhibit Staff/107 Muldoon1 for TIPS implied long-run inflation rates.

[26] Methods used here related to GDP-based growth rates are similar, if not identical to methods Staff has used in past proceedings. *See*, as an example, Staff's discussion of these methods and, to a limited extent, their conceptual underpinnings in Docket No. UE 233, Exhibit Staff/800, Storm/46 – 52. Growth rates relied upon by Staff are also shown in Exhibit Staff/104, Muldoon/1.

[27] See three-stage DCF models X and Y in Exhibit Staff/103.

Administration (SSA), the Congressional Budget Office's (CBO), with the remaining 20 percent as the average annual historical real GDP growth rate, established using regression analysis of U.S. Bureau of Economic Analysis (BEA) Nominal Historical,1980 Q1 – 2022 Q4, for the period 1980 through 2021, to which we apply a TIPS implied inflation forecast. These growth rates are shown below in Table 10.

Staff's third Composite Growth Rate is BEA Nominal Historical,1980 Q1–2023 Q4. These growth rates are shown below in Table 10.

TABLE 10
GROWTH RATES STAFF RELIED UPON

Stage 3 – Long-Term Annual Dividend and EPS Growth Rates						
Component	Real Rate	TIPS Inflation Forecast	20-Yr Nominal Rate	Weight	Weighted Rate	
Energy Information Administration (EIA)	2.24%	2.39%	4.69%	20.0%	0.94%	
Organization for Economic Co-operation and Development (OECD)ggridlines	1.81%	2.39%	4.24%	20.0%	0.85%	
Social Security Administration (SSA)	1.95%	2.39%	4.39%	20.0%	0.88%	
Congressional Budget Office (CBO)	2.02%	2.39%	4.46%	20.0%	0.89%	
BEA Nominal Historical,1980 Q1–2023 Q4	2.65%	2.39%	5.10%	20.0%	1.02%	
Composite				100%	4.58%	Composite
Congressional Budget Office Long-Term 20-Year Budget Outlook			3.80%	100.0%	4.46%	CBO
BEA Nominal Historical,1980 Q1–2023 Q4	2.65%	2.39%	5.10%	100.0%	5.10%	Historical

* Normally Staff uses CBO Nominal Rate, however in this case, Staff uses CBO's Real Rate and Staff's Tips Inflation Rate, which is higher.

Q. Did your analysis reflect a synthetic forward curve?

A. Yes. Staff utilized synthetic forward curve using UST Treasury Inflation Protected Securities (TIPS) break-even points. This reflects implied market-based inflationary expectations. Staff's recommendations are consistent with market activity indicating investor expectations of future inflation.

Staff assumes for purposes of its three-stage DCF modeling that LDC utility growth is bounded by the growth of the U.S. economy, and more

specifically impacted by challenges regarding U.S. population, workforce participation, and productivity in the long-run (20-year) modeling period.

Q. How do your methods employed in this case differ from those utilized by Staff in recent general rate cases?

A. Staff's methods and modeling parallel those employed by Staff in recent electric utility general rate cases. Staff continues to look primarily to referent federal sources for long-term GDP growth rates which weight long-run population, workforce participation, and productivity higher than current financial market events and global events with shorter if not transitory effects. Nevertheless, Staff monitors current financial news, and this testimony is informed by such.[28]

Q. Do you capture both the perspective of a buy and hold investor and an investor who plans to sell in the future?

A. Yes. Staff's recommended 8.9 to 9.3 percent range of reasonable ROEs is consistent with findings modeling the perspectives of both types of investors through Staff's two different three-stage DCF models.

Q. Does this approach capture a reasonable set of investor expectations like Staff's analysis in other recent general rate cases?

A. Yes.

Q. Is it appropriate to use estimates of long-term GDP growth rates to estimate future dividends for electric utilities?

[28] See Exhibit Staff/109, Muldoon/1-47 for news that investors in electric utilities are seeing.

A. Yes. In many of the Company's prior rate cases, Staff has shared plots of U.S. electric demand growth since 1950 on a three-year moving average. This downward trending consumption curve allows GDP growth to be a conservative proxy for both electric utility sales and dividend growth rates.

Q. Can relying on a long-term GDP growth rate overstate required ROE?

A. Yes. It is possible that Staff modeling anticipates greater growth than may be realized and so overstates required ROE to attract investors. Our highest growth rate presumes return to near historical U.S. GDP growth rates.

Q. Is it important to distinguish between long-run 20- to 30-year rates and rates over the next five years?

A. Yes. Over-extrapolating a snapshot of short-term data undermines confidence in modeling results. For example, Value Line, Blue Chip, and a variety of other financial resources focus primarily on the next five years. The next five years may be affected by recent events. Over the long run, population and productivity are the key drivers of economic growth. This is of concern with declines in the rate of growth of America's population.[29]

Q. In Staff's two different three-stage DCF models, Staff is looking for growth rates for a period between 10 and 30 years in the future, or an average of 20-years out. Why not just use a five- or ten-year projection?

A. Staff could use a five- or ten-year projection, but there is better information available. If a primary concern is whether enough Americans are both working

[29] See Exhibit Staff/109, Muldoon for concerns about Oregon population growth.

and highly productive to support a robustly growing economy 30 years from now, 10-year data will not be the most useful. This is because 10-year data is not yet impacted by retirement of persons born in 1960 or persons not immigrating and not being born to U.S. families now. A better solution is to use data that is projected with those difficulties in mind, i.e., 30-year data.

HAMADA EQUATION

Q. Your application of the Hamada Equation to un-lever peer utility capital structures and to re-lever at NW NATURAL's target capital structure increases required ROE. Why is this adjustment reasonable?

A. Staff employs the Hamada Equation to better compare companies with different capital structures driven by differing amounts of outstanding debt. As earlier discussed, Staff applied screening criteria already identify peers that have a very close capital structure to the Company. Use of the Hamada-adjusted results helps ensure that Staff has captured all material risk in our analysis because it captures additional risk associated with varying capital structure.

Within the confines of Staff's testimony, one can see the steps to un-lever and re-lever a peer company's capital structure as the equivalent of removing debt of peer companies with varying capital structures, and then adding enough debt back to equal the Company's balanced target capital structure in this general rate case.

Q. What accounts for differences in peer capital structures?

A. Each of the two models employs the Hamada equation[30] to calculate an adjustment for differences in capital structure between each peer utility and the Staff-proposed capital structure for the Company. When few peer utilities are available, the Hamada equation ensures Staff's analysis addresses differences in peer utility capital structures.

Q. Why is it important to consider capital structure when modeling ROE?

A. Different amounts of debt financing along with different tax rates result in disparate risk profiles among peer utilities used in ROE modeling to approximate the unknown appropriate ROE for the utility examined. All else equal, with more debt in a capital structure, investors require higher expected equity returns to compensate for the increased risk. Debt has a higher call on the company's available cash, and so less cash is available for equity holders. Staff uses the Hamada equation, named after Robert Hamada, to separate the financial risk of a levered firm from its business risk, and adjust the results of peer utilities to have results as though they had the same capital structure as the utility for whom an appropriate ROE is sought.

Q. Did Staff use a capital structure peer group screen with 40 percent to 60 percent debt, carrying more interest rate risk than NW Natural?

[30] Dr. Robert Hamada's Equation as used in Staff/404 separates the financial risk of a levered firm, represented by its mix of common stock, preferred stock, and debt, from its fundamental business risk. Staff corrects its ROE modeling for divergent amounts of debt, also referred to as leverage, between the Company and its peers.

A. Yes. Inclusive of Hamada adjustments, the higher debt sensitivity peer group would decrease Staff's recommended ROE by 24 basis points. In general, the Hamada equation addresses the capital structure itself to a certain degree, companies taking on more debt may also be taking on more risk in other areas than finance.

Q. Did Staff use robust and proven analytical methodologies?

A. Yes. Staff's methods are robust, proven, and parallel Staff's work for many years. The Commission, for example, expressly relies on the multi-stage DCF to determine the range of ROEs and relies on CAPM and risk premium models to check the reasonableness of results. This can be seen in Order No. 22-129 in Portland General Electric Company's GRC (Docket No. UE 394) as well as in Order No. 20-473 in PacifiCorp's GRC (Docket No. UE 374).

Q. Describe how you performed your analysis.

A. Using the cohort of proxy companies that met our screens, Staff ran each of Staff's two three-stage DCF models three times, each time using a different long-term growth rate.

Q. Was your analysis consistent with a range of reasonable ROE's from 8.9 percent to 9.3 percent?

A. Yes.

<u>Balanced Approach to ROE</u>

Q. Is picking a best fit ROE within Staff's suggested range of reasonable ROE's an easy decision for the Commission.

A. No. On the one hand, a lower ROE would reduce the impact of this general rate increase on NW Natural's utility customers in Oregon. This thought is likely foremost for CUB members and employees based on the earlier cited statement by Director Bob Jenks.

On the other hand, a higher ROE is more supportive of the Company's credit ratings, which are under pressure based on financial metrics and from those who would like to migrate from natural gas for space heating and other purposes to greater reliance on renewably generated electricity or other alternatives to natural gas. Also the Oregon overall regulatory environment is a very large part of rating agency decision making. And these ratings influence the Company's borrowing cost in a period of significant spending for plant additions. A utility customer might think of this like buying the same house at low or high interest / mortgage rates.

Balancing these and other considerations is necessary for the Commission to make decisions consistent with the Hope and Bluefield legal decisions mentioned earlier.

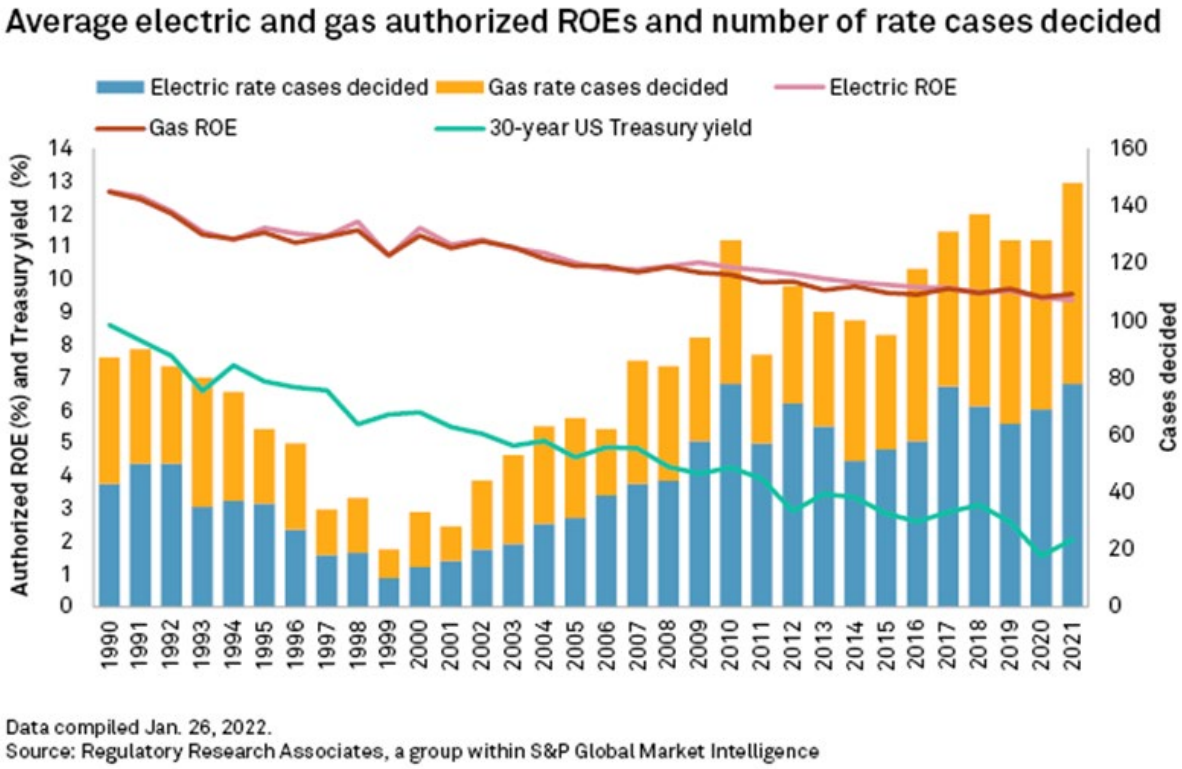
Q. Are we in a rising interest rate environment that compels higher ROEs?

A. No. The U.S. Federal Reserve expects to lower interest rates in the next two years.[31] Further interest rates and ROEs are both declining when looked at over a 30-year time frame. The downward glide path for ROE in Figure 1 below is not linear and may fluctuate through these uncertainties, but long-run

[31] See Staff/109, Muldoon/26.

GDP growth rates are mostly determined by the long future U.S. working age population and its productivity. These are downward pressures on GDP growth.

FIGURE 1 – Downward Glide Path of Utility ROES[32]



Q. What trend is Staff seeing?

A. Since 1990, according to Regulatory Research Associates (RRA), Electric and Electric Utility authorized ROEs have declined as the 30-year US Treasury (UST) has also declined. While the Fed recently raised interest rates, the Fed now anticipates loosening money supply soon.

[32] Published by Regulatory Research Associates (RRA), an affiliate of S&P Global Market Intelligence on Feb. 10, 2022.

GORDON GROWTH MODEL – As Check on ROE Findings

Q. What is the Gordon Growth model?

A. The Gordon Growth model (or Single Stage DCF model), similarly to the Three-Stage DCF model, is based on the principle that a company's value is equal to the net present value (NPV) of all its future cash flows and the company's current stock price. The Single-Stage DCF uses simpler assumptions than other models however, with dividend payments representing the only cash flow, and an assumption that growth will remain constant in perpetuity.[33]

Q. What are the positive aspects and potential shortfalls of the DCF model?

A. The most positive aspect of the Single-Stage model is its simplicity. An analyst can use this model to calculate a rudimentary cost of equity valuations without needing complex inputs or analysis, beyond selecting a trusted source for the next quarter's expected dividends. In fact, after some algebraic simplification, the return can be expressed by:

$$R = \frac{D_1}{P_0} + g$$

Where $\boldsymbol{R}$ is estimated ROE, $\boldsymbol{D_1}$ is the first dividend paid after stock purchase, $\boldsymbol{P_0}$ is the stock price, and $\boldsymbol{g}$ is the growth rate.

Caution and discretion must be used when sourcing inputs to the model; for example, growth rates should be based on well vetted and

[33] See Docket No. UG 347, Staff/1300, Muldoon Watson/31 – 39, for further discussion of the Single-Stage DCF model, and the Commission's historical treatment of its results.

reliable sources, as opposed to sell-side marketing information used by investment advisors to entice new investors. This is important to bear in mind when considering the results of any Single-Stage model, as reliance on overly optimistic inputs or use of outboard after-the-fact adjustments can have a large impact on the model output.

The Single-Stage model is based on simple principles and serves as a rough estimation of investor required ROE. It cannot incorporate known, measurable, and material information about the future usually built into Three-Stage DCF analysis. For this reason, Staff, consistent with Commission precedent, has traditionally only relied on it as a sensitivity check when rate making.

Q. How does Staff determine the dividend flow and growth rate for the single-stage DCF?

A. Much like Staff's Multi-Stage DCF, Staff sources its expected dividends from Value Line. We calculate the average dividend growth rate by comparing the expected dividend by Value Line and actual dividend for each for each company in the peer screen.

Q. What inputs does Staff use to build Staff's single-stage DCF model?

A. Staff uses the same representative draw of stock prices to build its single-stage DCF model as it uses in the three-stage DCF model. Current dividends and anticipated dividend growth are sourced from Value Line.

Q. What are the results of Staff's Gordon Growth model?

A. Using Staff's peer utility screen, the average required ROE under Staff's Gordon Growth model is 7.5 percent.

TABLE 11[34]

	1	2	3	4	5	6	7	8	9	11 = 9 + 10	13	14	15
	Screen #	Abbreviated Utility	UG 490 NWN	UG 490 Staff	UG 490 Staff Sensitivity	Ticker	Recent Stock $ Price	Current Dividend Yield	Next VL Annual Dividend	Anticipated Dividend Yield	VL Dividend Growth	Investor Required ROE	Screen #	
1	1	Atmos	Yes	Yes	Yes	ATO	116.00	2.6%	3.22	2.8%	7.3%	10.1%	1	1
2	3	New Jersey	Yes	No	No	NJR	42.43	3.7%	1.68	4.0%	5.0%	8.9%	3	2
3	4	NiSource	Yes	Yes	Yes	NI	26.97	3.7%	1.06	3.9%	4.2%	8.1%	4	3
4	5	NW Natural	Yes	Yes	Yes	NWN	33.46	5.8%	1.95	5.8%	0.4%	6.2%	5	4
5	6	ONE Gas	Yes	Yes	Yes	OGS	62.62	4.2%	2.64	4.2%	2.4%	6.7%	6	5
6	8	Southwest Gas	Yes	Yes	Yes	SWX	72.94	3.4%	2.48	3.4%	1.1%	4.5%	8	6
7	9	Spire	Yes	Yes	Yes	SR	60.01	4.8%	3.02	5.0%	4.7%	9.7%	9	7
8	10	American Water	No	No	Yes	AWK	119.76	2.3%	3.00	2.5%	-100.0%	-97.5%	10	8
9	11	California Water	No	No	Yes	CWT	46.04	2.3%	1.12	2.4%	-100.0%	-97.6%	11	9
10	12	Middlesex Water	No	No	Yes	MSEX	50.55	2.5%	1.32	2.6%	-100.0%	-97.4%	12	10
11	13	SJW	No	No	Yes	SJW	55.37	2.7%	1.60	2.9%	-100.0%	-97.1%	13	11
		No. of Peers:	7	6	10							Mean		
											Company Screen	7.7%	ROE	
											Staff Gas and Water Sensitivity Screen	N/A	ROE	
											Staff Screen	7.5%	ROE	

Findings in Table 11 above support selection in the lower end of Staff's range of reasonable ROEs.

[34] See Exhibit Staff/105, Muldoon/1 for Staff's full Gordon Growth Model.

CAPM – As Check on ROE Findings

Q. What is the Capital Asset Pricing Model (CAPM)?

A. The CAPM assumes that a stock's return on equity is a function of a risk-free return and a risk premium and that the risk premium should be augmented by a company's level of risk relative to the market, which is captured by Beta or β. All told, CAPM takes the form:

$$\boldsymbol{Required\ Return = r_f + \beta(r_m - r_f)}$$

Where $\boldsymbol{r_f}$ is the risk-free rate and $\boldsymbol{r_m}$ is the market return. Generally, the risk-free rate is assumed to be the rate of return on bonds. Taking cues from long-standing financial modelling, Staff calculates its CAPM using the yield on 30-year and 10-year US Treasury bonds as stand-ins the risk-free rate.

Q. Should the Commission scrutinize CAPM carefully?

A. Yes. CAPM only relies on a few inputs. In this case, there are three inputs: the risk-free rate, the market return, and the choice of Beta. Although it is generally agreed that the rate of return on US Treasury bonds is the proper choice for the risk-free rate, there is much discussion about what maturity should be used for Beta and the market return.

There are a variety of sources to find or calculate both Beta and the market return. Because there are so many sources for two inputs into this simple model, an uninformed or malicious investigator could use unrepresentative values to motivate abnormal required returns. It is therefore of the utmost importance to be thoughtful and consistent in choosing CAPM parameters. In Commission activities, we have standardized on Value Line

(VL) Betas that are broadly used to give apples-to-apples modeling output comparisons. Staff has used CAPM for validation rather than rate setting in past cases.

Q. Where do you find information on companies' Beta estimates?

A. Estimates of Beta can be found from many sources including Bloomberg, Yahoo Finance, and VL. Traditionally, the Commission has relied on Value Line's Beta estimates to conduct analysis to maintain consistency in regulation between rate cases. The perils of switching between Beta estimates, known as "Beta shopping," will be addressed later in this testimony.

Q. Where do you find information on market returns?

A. Market returns can also be found or calculated from a variety of places. Two common sources for market returns are historical returns on stock market indices and projections for future growth. As earlier discussed, care should be taken in selecting a market return due to the volatile nature of the stock market.

Q. What issues can arise from an improper market return selection?

A. For any company with a positive Beta, a higher market return translates directly into a higher required return according to the CAPM formula. Overstating market returns, a required return estimate can vary by up to three percent for a typical regulated utility.

Q. How does Staff recommend that market returns be calculated?

A. Staff recommends that market returns be calculated based off the historic long-run growth rates of stocks and an up-to-date measure of the risk-free rate. By using historical averages, a modeler does not run the risk of a large shock in

one period unnecessarily augmenting estimated returns, much like the large negative shock caused by the COVID-19 pandemic, the roaring economic recovery post-pandemic, or the ongoing conflict in Ukraine.

As has been done in past rate cases, Staff uses the market risk premium calculated by Ibbotson and the implied market risk premium from Morningstar's Stocks, Bonds, Bills, and Inflation 2015 Classic Yearbook, which measures average returns since 1926. These two sources imply that the risk premium would be 4.5 percent and 6.0 percent, respectively. Staff also calculates market risk premiums as described herein using annualized monthly data for 30 years of geometric S&P 500 returns paired with current 30-year UST yields.

Q. What recommendations do you have for the maximum authorized ROE according to CAPM?

A. As stated previously, Staff only uses CAPM for validation rather than rate setting due to its historic unreliability. Within Staff's peer utility screen, the estimated ROEs from Staff's CAPM under Staff assumptions average 9.2 percent. Using the Company's peer screen and Staff's methods, the average estimated ROE observed is 9.3 percent. If one uses the Company's inflated market risk premium, one can boost results to 12.4 percent like that found as underlying averaged components in NW Natural's testimony.

Q. Has the Commission determined that CAPM should not be relied upon as a stand-alone modeling method?

A. Yes. The Commission made this determination in two general rate cases in 2001 with the issuance of Order No. 01-777 and Order No. 01-787, but still permits use of the CAPM as a check on other modeling methods employed.[35]

DIFFERENCES IN NW NATURAL ROE MODELING FROM STAFFS

Q. What are other differences in the Company's modeling that lead to different ROE modeling results.

A. Staff relies on Value Line data, which generally avoids benchmark shopping.

Q. What is benchmark shopping?

A. Benchmark shopping is performing a review of different data sources with different calculation methods and taking from that cross section certain benchmark data that is then argued before the Commission is most appropriate for this instance of use. The Commission then gets to hear exhaustive arguments on subjects such as the reversion to mean calculations behind Value Line, Bloomberg, and various other potential benchmarks. After an exhaustive examination, the use of alternate benchmarks can be usually determined by the Commission to be obfuscation that detracts from the exercise or modeling at hand.

Q. What are other ways that NW Natural's testimony on ROE might be considered off target?

A. In the Company's discussion of its selection of Risk-Free Rate in CAPM analysis, the Company offers various methods and then averages them.

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[35] *In the Matter of Portland General Electric*, Docket No. UE 115, Order No. 01-777 at 32; *In the Matter of PacifiCorp*, Docket No. UE 116, Order No. 01-787 at 21 (September 7, 2001).

What the Company does not mention is that it is averaging a variety of methods of inflating estimation of market results and market risk premium (MRP). For example, averaging super optimistic future projections of market returns with overly-long 90-year market returns does not yield a conservative MRP likely to reflect the near future. Think of this like trying to estimate the weight of your cat or dog. One could take the average weight of a whale, and the average weight of an elephant (both mammals) and suggest that would be an excellent proxy for the weight of your pet. The first estimate for the whale is too large. The second estimate of the elephant is also too large and not reflective of a conservative estimate because though it is smaller than that of the whale, it is still not a good estimate of the weight of your pet.

Q. What other misdirection might the Commission watch for?

A. The Commission should be vigilant for the substitution of five- to ten-year growth rates and other near-term data for 20- to 30-year data and projections from referent entities. Depending on the context, five- to ten-year data can be characterized as “long-term.” But, for purposes of the analysis to estimate ROEs, long-term means 20-30 years in the future.

Generally, Value Line and Blue-Chip type resources focus on the next one to five years and call a future projection five to ten years into the future their long-tern projection. In contrast the U.S.: Social Security Administration, the Congressional Budget Office, the Bureau of Economic Analysis, Energy Information Administration, and other federal referent bodies mean 20-30 years into the future when they say “long-term”.

Q. Why is that important in the context of ROE modeling?

A. Over the next few years, the United States still has a large working age population, despite the graying of America. Productivity has declined in recent years, but near-term GDP growth is still relatively strong.

But looking out 20-30 years, many Americans will be retired, and various other challenges cause referent entities to project lower GDP growth. So averaging a set of near-term growth numbers and using that average in lieu of long-run numbers from referent entities talking about 20-30 years in the future also boosts ROE modeling results.

Q. When will Staff provide more detailed examples of these approaches in NW Natural's ROE modeling?

A. Because Staff has just updated its natural gas utility peer market information to be current as of April, Staff will have time to illustrate how some of the above techniques are used in the Company's ROE modeling to present the appearance of conservative model building while inflating ROE model results.

Q. What was the result of Staff's updating its ROE modeling to incorporate most current market data?

A. Staff's top end of its ROE modeling results dropped 10 basis points from the modeling Staff did based on January 2024 market information.

6. PENSIONS AND POST RETIRMENT MEDICAL EXPENSE

Q. Does Staff recommend an adjustment to the Company's pensions and post-retirement medical expense in this general rate case?

A. No.

Q. Did Staff carefully analyze the Expected Return on Assets for each of the Company's pensions and post-retirement medical expense?

A. Yes. Staff performed its usual robust analysis, discussed these issues in detail at a workshop with the Company on March 5, 2024, and issued follow-up data requests, the responses to which corroborated Staff's findings. Staff found the Company's actuarial work consistent with the Company's benchmarks inclusive of EROA for Oregon Public Employee Retirement System (PERS), CA PERS, and California State Teachers' Retirement System.

Q. Did Staff carefully analyze the discount rate assumptions for each of the Company's pensions and post-retirement medical expense?

A. Yes. Staff also calibrated the revenue requirement impact of each of the above factors and confirmed that in aggregate the Company's work in this area was reasonable and no adjustment is required in this general rate case.

7. PHYSICAL AND CYBER SECURITY

Q. Does Staff recommend an adjustment to Information Technology (IT) and Security (IT&S) projects?

A. Please see Exhibit Staff/1000 Dyck for detail on Staff review of IT&S Projects that go into service in the test year.

Q. Does Staff Review the Company's project management performance and cost controls in compliance with TSA Security Directive 2 and updates thereto?

A. Yes. The Commission's RSUP group including Accounting and Finance, Safety, and Energy Costs Staff are reviewing the Company's investments in both physical and cyber security on an ongoing basis.

Q. Will Staff discuss the Companies practices and detailed costs of certain projects herein?

A. No. The Commission's RSUP group including X Accounting and Finance, Safety, and Energy Costs Staff are reviewing the Company's investments in both physical and cyber security on an ongoing basis to comply with U.S. Transportation Security Administration (TSA) and other agencies directives and to protect critical infrastructure in general.

Q. Why is this information on a "Federal Need to Know Basis"?

A. Proper handling of highly confidential critical infrastructure information protects the lives, livelihood, and modern standard of life for Oregonians.

Q. When federal agencies mandate the Company comply with new or updated directive does that give NW Natural a blank check to spend

whatever it takes and take a "cost is no object" approach to physical and cyber security?

A. No. Like all other project management the Commission reviews, NW Natural must consider less costly next best alternatives to its physical and cyber security capital spending and other initiatives. The Company must practice prudent project management and cost controls based on what is known and knowable at the time of NW Natural's decisions.

Q. What sort of risks does the Company have to consider in prudently managing its expenditures?

A. In general, the Company must consider two main types of risk. The first type is protection against something that is relatively likely to happen. One might think of this as a focus on the 95 percent of risks most likely to materialize.

But then a Commission jurisdictional energy utility must also consider and protect against High-Impact Low-Frequency (HILF) events. These are unlikely to happen, but if they do happen, outcomes could be catastrophic.

Q. Why does Staff look at these issues on an ongoing, open-ended basis?

A. Directives, standards, and best practices regarding physical and cyber security that the Company must comply with are regularly changing to address emerging concerns. Rather than a one-and-done review, Staff teams of financial and safety professionals, and engineers must vigilantly review incremental new Company initiatives and expenditures.

Just as utility customers cannot make necessary purchases at any price or only consider the most expensive options in life, utilities must frugally put in

place assets and processes that get the job done effectively at reasonable cost.

8. CONCLUSION

Q. What is Staff's recommendation regarding ROE?

A. Staff recommends that the Commission select a point ROE from within Staff's range of reasonable ROE's from 8.9 percent to 9.3 percent (after rounding). This is a difficult decision balancing financial market criteria and credit ratings on the one hand against reducing energy burden for Oregon customers of NW Natural on the other.

Q. What Rate of Return (ROR) is generated by the Staff's aggregated Cost of Capital recommendations on Capital Structure, ROE, and Cost of Long-Term Debt?

A. Staff provides an illustrative 6.906 percent Overall Rate of Return (ROR), based on the midpoint of Staff's range of reasonable ROEs of 9.10 percent, a 50 percent equity layer Capital Structure, and the settled 4.712 percent Cost of Long-Term Debt.

Q. What recommendation does Staff have regarding a point estimate within Staff's range of reasonable ROEs?

A. Staff finds that recommending a range is appropriate rather than any single point estimate. The range is from 8.9 percent to 9.3 percent. The range provides values from which the Commission can use to balance the interests of shareholders and energy affordability for Oregon utility customers and still meet statutory requirements to provide for a fair return on equity.

Q. Does Staff recommend an adjustment to pensions and post-retirement expense in this general rate case?

A. No. Staff's usual robust analysis found the Company's work on these issues to be reasonable and in aggregate consistent with Staff's benchmarks.

Q. Does Staff recommend incremental adjustments in this testimony over those provided IN Exhibit Staff/1000 Dyck for IT&S projects?

A. No.

Q. Does that conclude your testimony?

A. Yes.

CERTIFICATE OF SERVICE

UG 490

I certify that this day I served the foregoing document upon all the following parties or attorneys of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid or by electronic mail pursuant to OAR 860-001-0180 (which may include a link to a secure shared file service).

Dated this 31ST day of May, 2024, at Salem, Oregon.

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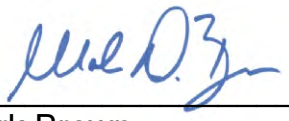

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