Docket No. UG-951415
Exhibit ____ (PAS-Testimony)
Witness: Peter A. Schwartz

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

GENERAL RATE APPLICATION
OF

CASCADE NATURAL GAS CORPORATION

February 15, 1995

Supplemental Prepared Direct Testimony of

Peter A. Schwartz

Weather Normalization Adjustment

WUTC UG-950326,
DOCKET NO. -951415
EXHIBIT # 37
ADMIT ☒ W/D ☐ REJECT ☐

SUPPLEMENTAL EXHIBIT ___ (PAS-2S)

Adjustment Required to Reflect Normal Weather for the Twelve Months Ended December 31, 1994

Q. Will you please state the reason for submitting this Supplemental Testimony and associated exhibit?

A. Cascade submitted its Weather Normalization Revenue Adjustment Exhibit (PAS___2) using a methodology approved by the WUTC in Cascade's 1986 ratecase U-86-100). This testimony supplements the testimony submitted by Peter Schwartz, Exhibit ___ (PAS-Testimony) beginning on Page 5, line 13 and ending on Page 7, line 20. The attached Supplemental Exhibit ___ (PAS-2S) supplements Exhibit ___ (PAS-2).

Since 1986, other methodologies have been used by LDC's in subsequent rate filings. Using a "mutual gains discussion" format Cascade and the WUTC Staff cooperatively considered alternate methods for computing its weather normalization revenue adjustment to try to establish an objective standard for this general rate application. These methods included several variations of regression type analyses which was a different approach to Cascade's original weather normalization revenue adjustment. The overall method selected was superior to the alternatives examined as it returned the best set of statistical analyses.

Q. Will you please describe the selected weather normalization revenue adjustment methodology?

CASCADE NATURAL GAS CORPORATION
22 FAIRVIEW AVENUE AVENUE NORTH
SEATTLE, WA 98109
(206)624-3900

A. This new method starts with five years of therm consumption (1990 - 1994) by month, by weather area, by rate schedule; and five years of weather data (1990 - 1994) by month by weather area. The weather areas utilized included Bellingham, Hoquiam, Yakima and Walla Walla. The rate schedules that were used to compute this revenue adjustment included residential schedules 501 and 503 and commercial schedule 504.

The regression algorithm was initiated by regressing each month's therm consumption against weather data for each locale and rate schedule by month. Regression equation output coefficients were calculated for a constant (baseload) and a slope (weather sensitive use per degree day) for each of the twelve months.

The baseload constant coefficient is multiplied by days per month and by customers per month to calculate total monthly baseload. The weather sensitive coefficient for each month is multiplied by the number of customers and by the number of degree days for the month. Total baseload and total weather sensitive consumption are added to sum total monthly test period predicted therm consumption.

Cascade used a "backcast" methodology to isolate therm consumption variations due to weather only. This methodology involves using the same baseload constant and weather sensitive slope coefficients from the regression equation output for restating actual therm consumption during the test period as well as for predicting what the actual consumption would have been, had the weather been normal. Once

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22 FAIRVIEW AVENUE AVENUE NORTH
SEATTLE, WA 98109
(206)624-3900

the baseload constant and weather sensitive slopes are calculated, the only data that is changed to derive actual and normalized therm consumption is monthly degree days. Cascade selected this methodology because it nets out the statistical error associated with regression equations. This "error" represents all the other variation in consumption that is not due to weather sensitivity that is not captured in the regression equation. This "error" component is readily apparent since the r-squared measure of correlation in this data set never equals one (an r-squared equal to one would mean perfect correlation of data). By using the same baseload constant and monthly weather sensitive slope coefficients, for both the predicted "actual" therm consumption and the normalized therm consumption, only the therm consumption variation due to weather is calculated by the regression equation.

Total predicted test period therms are subtracted from weather normalized therms to calculate the therm adjustment by rate schedule by weather area by month. The monthly revenue adjustment is derived by multiplying the margin rate per therm by the ratio of therms consumed by customers in each rate block for each rate schedule. The ratio of therms consumed in each rate block is found by computing the percentage of the actual therm consumption of customers total monthly bills whose consumption is in each rate block, by rate schedule by month. These rate block ratios are multiplied by the therm adjustment for each month to calculate the therm adjustment in each rate block by rate schedule by month. The margin per therm for each rate block is multiplied by the therm adjustment by month to

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22 FAIRVIEW AVENUE AVENUE NORTH
SEATTLE, WA 98109
(206)624-3900

calculate the monthly revenue adjustment by rate block. Monthly revenue adjustments by rate block are summed to total monthly revenue adjustments, by rate schedule by month.

Q. What is the total revenue adjustment resulting from Exhibit ____ (PAS-2S)?

A. The attached Supplemental Exhibit ___ (PAS-2S) shows a total therm adjustment of 5,580,675 therms resulting in a weather normalization revenue adjustment of $1,163,959. This adjustment shows that the test year was warmer than normal. Therefore, the $1,163,959 weather normalization revenue adjustment should be added to test year revenues.

CASCADE NATURAL GAS CORPORATION
22 FAIRVIEW AVENUE AVENUE NORTH
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Supplemental Exhibits of

Peter A. Schwartz

Supplement Exhibit ___ (PAS-2S) - Weather Normalization Adjustment

Docket No. UG-951415
Supplemental Exhibit ___ (PAS-2S)
Schedule 1 of 1
Page 1 of 1

Cascade Natural Gas Corporation
WEATHER NORMALIZTION MARGIN ADJUSTMENT
State of Washington

Line No.	Month	R/S 501 Weather Adjustment Summary		R/S 503 Weather Adjustment Summary							
		R/S 501 Weather Adj Therms	501 Margin Adjustment (.21947 $/Th)	Block 1 R/S 503 Therms %	Block 2 R/S 503 Therms %	Block 1 503 Weather Adj Therms	Block 2 503 Weather Adj Therms	Total 503 Weather Adj Therms	Block 1 503 Margin Adjustment (.25381 $/Th)	Block 2 503 Margin Adjustment (.16559 $/Th)	Total 503 Margin Adjustment
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	Jan-94	1,027,206	$ 225,446	0.9553%	99.0447%	11,990	1,243,132	1,255,122	$ 3,043	$ 315,525	$ 318,568
2	Feb-94	(344,856)	(75,687)	1.4180%	98.5820%	(5,974)	(415,320)	(421,294)	(1,516)	(105,414)	(106,931)
3	Mar-94	269,431	59,133	1.6351%	98.3649%	6,096	366,760	372,857	1,547	93,089	94,636
4	Apr-94	297,525	65,299	9.2958%	90.7042%	33,393	325,830	359,223	8,476	82,700	91,176
5	May-94	157,531	34,574	24.7353%	75.2647%	50,825	154,652	205,477	12,900	39,253	52,153
6	Jun-94	(32,577)	(7,150)	66.9223%	33.0777%	(31,732)	(15,684)	(47,416)	(8,054)	(3,981)	(12,035)
7	Jul-94	12,998	2,853	81.0271%	18.9729%	28,253	6,616	34,868	7,171	1,679	8,850
8	Aug-94	44,433	9,752	89.9394%	10.0606%	106,209	11,881	118,090	26,957	3,015	29,973
9	Sep-94	97,489	21,396	84.2215%	15.7785%	201,753	37,798	239,550	51,208	9,594	60,801
10	Oct-94	(53,219)	(11,680)	55.7089%	44.2911%	(55,899)	(44,443)	(100,342)	(14,188)	(11,280)	(25,468)
11	Nov-94	(432,660)	(94,958)	5.2764%	94.7236%	(34,000)	(610,391)	(644,391)	(8,630)	(154,926)	(163,556)
12	Dec-94	237,646	52,157	0.7272%	99.2728%	1,923	262,466	264,389	488	66,618	67,106
13	Total	1,280,946	$ 258,158	15.9967%	84.0033%	312,837	1,323,296	1,636,133	$ 79,402	$ 335,872	$ 415,274

Line No.	Month	R/S 504 Weather Adjustment Summary								Total Weather Adjustment Summary	
		Block 1 R/S 504 Therms %	Block 2 R/S 504 Therms %	Block 1 Weather Adj Therms	Block 2 Weather Adj Therms	Total Weather Adj Therms	Block 1 504 Margin Adjustment (.22661 $/Th)	Block 2 504 Margin Adjustment (.17451 $/Th)	Total 504 Margin Adjustment	Total Adj Therms	Total Margin Adjustment
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
14	Jan-94	0.4846%	99.5154%	8,646	1,775,651	1,784,297	$ 1,959	$ 309,877	$ 311,836	4,066,626	$ 855,850
15	Feb-94	0.6381%	99.3619%	(3,865)	(601,895)	(605,760)	(876)	(105,039)	(105,915)	(1,371,911)	(288,533)
16	Mar-94	0.8911%	99.1089%	3,781	420,512	424,293	857	73,385	74,242	1,066,580	228,012
17	Apr-94	2.6490%	97.3510%	12,975	476,831	489,806	2,940	83,214	86,154	1,146,553	242,629
18	May-94	4.8784%	95.1216%	12,577	245,233	257,810	2,850	42,797	45,647	620,819	132,374
19	Jun-94	5.1572%	94.8428%	(2,827)	(51,983)	(54,810)	(641)	(9,072)	(9,712)	(134,803)	(28,897)
20	Jul-94	5.4747%	94.5253%	6,695	115,601	122,297	1,517	20,174	21,691	170,163	33,394
21	Aug-94	5.2738%	94.7262%	4,297	77,179	81,476	974	13,469	14,443	243,999	54,167
22	Sep-94	4.7347%	95.2653%	20,210	406,644	426,855	4,580	70,965	75,545	763,894	157,743
23	Oct-94	4.1732%	95.8268%	(3,160)	(72,573)	(75,733)	(716)	(12,665)	(13,381)	(229,295)	(50,530)
24	Nov-94	1.4512%	98.5488%	(9,532)	(647,309)	(656,841)	(2,160)	(112,965)	(115,125)	(1,733,892)	(373,639)
25	Dec-94	0.4862%	99.5138%	2,285	467,622	469,907	518	81,607	82,125	971,942	201,388
26	Total	1.9401%	98.0599%	52,082	2,611,514	2,663,596	$ 11,802	$ 455,747	$ 467,550	5,580,675	$ 1,163,959

* Margins above utilized retail base rates effective 1/1/94 which did not include rate impacts from approved temporary "technical" rate filings on rate schedule 595. The base rates were "grossed up" to account for gross revenue fees. Gas costs effective 1/1/94 were subtracted from the "grossed up" base rates to calculate margins on each applicable block for each rate schedule.

** Prorated therms and unbilled therms are not included in therm counts above. However, since prorated therms and unbilled therms are accounted for in the weather normalization analysis, they are assumed to follow the same percentage by month, by rate block.

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