

**Exhibit No. \_\_ (BLR-4)**  
**Weather Normalization Results Comparison**  
**Witness: Brian L. Robertson**

WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION,  
Complainant,

v.

CASCADE NATURAL GAS  
CORPORATION,

Respondent.

**CASCADE NATURAL GAS CORPORATION**

**EXHIBIT OF BRIAN L. ROBERTSON**

**WEATHER NORMALIZATION RESULTS COMPARISON**

**June 19, 2020**

	Month	Bellingham	Difference from previous month to current month	Month	Standard deviation of change from previous month to current month
	1/1/2009	1	8,592,846	1	741,153
	2/1/2009	2	5,930,860	2	783,637
	3/1/2009	3	5,826,264	3	557,747
	4/1/2009	4	3,648,712	4	639,045
	5/1/2009	5	2,221,577	5	495,470
	6/1/2009	6	1,615,698	6	467,172
	7/1/2009	7	1,331,740	7	336,994
	8/1/2009	8	1,465,195	8	474,239
	9/1/2009	9	1,624,842	9	524,765
	10/1/2009	10	3,732,099	10	301,598
	11/1/2009	11	7,273,652	11	603,772
	12/1/2009	12	8,618,531	12	850,880
	1/1/2010	1	8,625,341		(6,810)
	2/1/2010	2	6,170,174		2,455,166
	3/1/2010	3	5,395,339		774,835
	4/1/2010	4	4,386,064		1,009,275
	5/1/2010	5	2,691,355		1,694,709
	6/1/2010	6	1,642,618		1,048,737
	7/1/2010	7	1,329,700		312,918
	8/1/2010	8	1,830,742		(501,042)
	9/1/2010	9	2,144,669		(313,926)
	10/1/2010	10	4,245,907		(2,101,238)
	11/1/2010	11	7,082,104		(2,836,197)
	12/1/2010	12	9,922,375		(2,840,272)
	1/1/2011	1	8,219,478		1,702,898
	2/1/2011	2	6,848,438		1,371,039
	3/1/2011	3	6,766,474		81,965
	4/1/2011	4	4,096,219		2,670,255
	5/1/2011	5	2,908,076		1,188,142
	6/1/2011	6	2,064,529		843,547
	7/1/2011	7	1,533,462		531,068
	8/1/2011	8	1,542,810		(9,349)
	9/1/2011	9	1,872,070		(329,259)
	10/1/2011	10	4,192,805		(2,320,735)
	11/1/2011	11	7,248,916		(3,056,111)
	12/1/2011	12	9,534,492		(2,285,575)
	1/1/2012	1	8,041,696		1,492,795
	2/1/2012	2	7,333,130		708,567
	3/1/2012	3	6,065,734		1,267,396
	4/1/2012	4	4,312,640		1,753,094
	5/1/2012	5	2,588,271		1,724,370
	6/1/2012	6	1,940,292		647,979
	7/1/2012	7	1,385,291		555,000
	8/1/2012	8	1,791,721		(406,429)
	9/1/2012	9	1,632,994		158,727
	10/1/2012	10	4,207,204		(2,574,210)
	11/1/2012	11	7,300,811		(3,093,607)
	12/1/2012	12	9,807,425		(2,506,614)

1/1/2013	1	8,317,718	1,489,707
2/1/2013	2	7,574,748	742,970
3/1/2013	3	5,910,880	1,663,868
4/1/2013	4	4,070,700	1,840,180
5/1/2013	5	2,858,734	1,211,967
6/1/2013	6	1,623,303	1,235,430
7/1/2013	7	1,226,118	397,185
8/1/2013	8	1,658,524	(432,406)
9/1/2013	9	1,928,478	(269,954)
10/1/2013	10	4,312,449	(2,383,970)
11/1/2013	11	7,492,150	(3,179,701)
12/1/2013	12	9,014,429	(1,522,279)
1/1/2014	1	8,238,880	775,549
2/1/2014	2	6,722,151	1,516,729
3/1/2014	3	5,997,019	725,132
4/1/2014	4	4,094,724	1,902,295
5/1/2014	5	2,882,470	1,212,254
6/1/2014	6	1,780,917	1,101,553
7/1/2014	7	2,157,741	(376,824)
8/1/2014	8	1,300,803	856,938
9/1/2014	9	2,160,599	(859,797)
10/1/2014	10	4,088,689	(1,928,090)
11/1/2014	11	8,891,661	(4,802,972)
12/1/2014	12	8,854,920	36,741
1/1/2015	1	9,261,501	(406,580)
2/1/2015	2	6,455,096	2,806,405
3/1/2015	3	5,816,263	638,833
4/1/2015	4	4,162,368	1,653,895
5/1/2015	5	2,746,430	1,415,938
6/1/2015	6	1,059,435	1,686,996
7/1/2015	7	1,359,176	(299,741)
8/1/2015	8	855,712	503,464
9/1/2015	9	1,785,125	(929,413)
10/1/2015	10	4,291,085	(2,505,960)
11/1/2015	11	7,759,188	(3,468,104)
12/1/2015	12	10,192,542	(2,433,353)
1/1/2016	1	9,623,055	569,486
2/1/2016	2	6,762,099	2,860,957
3/1/2016	3	6,759,309	2,790
4/1/2016	4	4,083,348	2,675,960
5/1/2016	5	2,578,675	1,504,673
6/1/2016	6	1,798,538	780,137
7/1/2016	7	1,519,618	278,920
8/1/2016	8	1,227,114	292,505
9/1/2016	9	1,936,429	(709,315)
10/1/2016	10	4,964,726	(3,028,297)
11/1/2016	11	8,501,880	(3,537,155)
12/1/2016	12	10,126,825	(1,624,945)
1/1/2017	1	9,561,365	565,460
2/1/2017	2	6,825,068	2,736,297
3/1/2017	3	6,794,192	30,876

4/1/2017	4	5,370,341	1,423,852
5/1/2017	5	3,187,067	2,183,274
6/1/2017	6	1,059,353	2,127,714
7/1/2017	7	1,386,964	(327,611)
8/1/2017	8	1,128,312	258,651
9/1/2017	9	2,038,980	(910,668)
10/1/2017	10	4,202,413	(2,163,433)
11/1/2017	11	8,372,603	(4,170,190)
12/1/2017	12	9,405,783	(1,033,179)
1/1/2018	1	9,768,837	(363,054)
2/1/2018	2	7,727,815	2,041,022
3/1/2018	3	6,406,321	1,321,494
4/1/2018	4	4,686,893	1,719,428
5/1/2018	5	2,912,696	1,774,196
6/1/2018	6	1,988,812	923,884
7/1/2018	7	1,489,124	499,688
8/1/2018	8	722,204	766,920
9/1/2018	9	2,141,679	(1,419,475)
10/1/2018	10	4,615,548	(2,473,869)
11/1/2018	11	8,852,989	(4,237,441)
12/1/2018	12	9,446,837	(593,849)
1/1/2019	1	9,437,706	9,131
2/1/2019	2	8,020,246	1,417,460
3/1/2019	3	6,996,566	1,023,680
4/1/2019	4	3,599,809	3,396,757
5/1/2019	5	3,475,618	124,191
6/1/2019	6	1,771,626	1,703,992
7/1/2019	7	1,573,869	197,757
8/1/2019	8	911,968	661,901
9/1/2019	9	2,558,967	(1,646,999)
10/1/2019	10	5,274,390	(2,715,424)
11/1/2019	11	8,128,866	(2,854,476)
12/1/2019	12	10,370,481	(2,241,614)
1/1/2020	1		

	Month	Bellingham	Difference from previous month to current month	Month	Standard deviation of change from previous month to current month
1/1/2009	1	8,898,787		1	291,765
2/1/2009	2	6,206,681	2,692,106	2	298,499
3/1/2009	3	5,691,325	515,356	3	113,432
4/1/2009	4	4,290,889	1,400,435	4	260,496
5/1/2009	5	2,250,647	2,040,243	5	166,051
6/1/2009	6	1,312,422	938,224	6	114,605
7/1/2009	7	1,346,440	(34,017)	7	115,045
8/1/2009	8	1,341,085	5,354	8	1,669
9/1/2009	9	1,292,098	48,987	9	158,148
10/1/2009	10	4,039,243	(2,747,144)	10	183,451
11/1/2009	11	7,219,211	(3,179,968)	11	207,685
12/1/2009	12	8,601,828	(1,382,618)	12	161,536
1/1/2010	1	8,856,092	(254,263)		
2/1/2010	2	6,515,984	2,340,108		
3/1/2010	3	5,904,672	611,312		
4/1/2010	4	4,622,530	1,282,142		
5/1/2010	5	2,660,626	1,961,904		
6/1/2010	6	1,814,914	845,713		
7/1/2010	7	1,471,438	343,475		
8/1/2010	8	1,471,243	195		
9/1/2010	9	1,905,421	(434,178)		
10/1/2010	10	4,366,650	(2,461,229)		
11/1/2010	11	7,480,106	(3,113,455)		
12/1/2010	12	9,227,603	(1,747,497)		
1/1/2011	1	8,843,951	383,652		
2/1/2011	2	6,581,644	2,262,307		
3/1/2011	3	5,996,236	585,408		
4/1/2011	4	4,563,158	1,433,078		
5/1/2011	5	2,697,999	1,865,159		
6/1/2011	6	1,834,513	863,486		
7/1/2011	7	1,489,519	344,994		
8/1/2011	8	1,487,893	1,626		
9/1/2011	9	1,945,015	(457,122)		
10/1/2011	10	4,222,351	(2,277,337)		
11/1/2011	11	7,471,043	(3,248,692)		
12/1/2011	12	9,374,572	(1,903,529)		
1/1/2012	1	8,803,013	571,559		
2/1/2012	2	6,665,474	2,137,539		
3/1/2012	3	6,030,672	634,802		
4/1/2012	4	4,444,857	1,585,815		
5/1/2012	5	2,636,998	1,807,859		
6/1/2012	6	1,872,568	764,429		
7/1/2012	7	1,519,188	353,380		
8/1/2012	8	1,517,859	1,329		
9/1/2012	9	1,944,428	(426,569)		
10/1/2012	10	4,180,476	(2,236,047)		
11/1/2012	11	7,475,027	(3,294,551)		
12/1/2012	12	9,510,750	(2,035,723)		

1/1/2013	1	8,820,692	690,058
2/1/2013	2	6,732,687	2,088,005
3/1/2013	3	6,062,605	670,081
4/1/2013	4	4,373,065	1,689,540
5/1/2013	5	2,664,749	1,708,316
6/1/2013	6	1,878,184	786,565
7/1/2013	7	1,518,304	359,879
8/1/2013	8	1,516,382	1,923
9/1/2013	9	1,986,146	(469,765)
10/1/2013	10	4,169,579	(2,183,433)
11/1/2013	11	7,568,047	(3,398,468)
12/1/2013	12	9,466,132	(1,898,085)
1/1/2014	1	8,717,636	748,496
2/1/2014	2	6,851,194	1,866,442
3/1/2014	3	6,192,670	658,524
4/1/2014	4	4,407,638	1,785,032
5/1/2014	5	2,712,344	1,695,294
6/1/2014	6	1,884,308	828,036
7/1/2014	7	1,573,515	310,793
8/1/2014	8	1,573,595	(80)
9/1/2014	9	2,012,431	(438,835)
10/1/2014	10	4,148,657	(2,136,226)
11/1/2014	11	7,797,842	(3,649,186)
12/1/2014	12	9,430,121	(1,632,278)
1/1/2015	1	8,605,153	824,967
2/1/2015	2	7,130,345	1,474,809
3/1/2015	3	6,188,423	941,921
4/1/2015	4	4,353,045	1,835,379
5/1/2015	5	2,761,631	1,591,414
6/1/2015	6	1,896,459	865,172
7/1/2015	7	1,522,255	374,204
8/1/2015	8	1,522,792	(538)
9/1/2015	9	1,969,115	(446,323)
10/1/2015	10	4,269,332	(2,300,216)
11/1/2015	11	7,802,938	(3,533,606)
12/1/2015	12	9,646,765	(1,843,827)
1/1/2016	1	8,902,008	744,756
2/1/2016	2	7,071,759	1,830,250
3/1/2016	3	6,322,596	749,162
4/1/2016	4	4,370,493	1,952,104
5/1/2016	5	2,761,613	1,608,880
6/1/2016	6	1,918,361	843,252
7/1/2016	7	1,553,826	364,535
8/1/2016	8	1,552,801	1,024
9/1/2016	9	1,965,858	(413,056)
10/1/2016	10	4,439,308	(2,473,451)
11/1/2016	11	7,875,516	(3,436,207)
12/1/2016	12	9,674,873	(1,799,357)
1/1/2017	1	9,126,882	547,991
2/1/2017	2	7,048,222	2,078,661
3/1/2017	3	6,432,821	615,401

4/1/2017	4	4,453,340	1,979,480
5/1/2017	5	2,856,835	1,596,505
6/1/2017	6	1,904,422	952,413
7/1/2017	7	1,544,534	359,889
8/1/2017	8	1,543,812	721
9/1/2017	9	1,979,166	(435,354)
10/1/2017	10	4,400,874	(2,421,708)
11/1/2017	11	8,056,087	(3,655,213)
12/1/2017	12	9,800,108	(1,744,020)
1/1/2018	1	9,281,978	518,129
2/1/2018	2	7,188,715	2,093,263
3/1/2018	3	6,505,909	682,807
4/1/2018	4	4,530,314	1,975,595
5/1/2018	5	2,921,978	1,608,336
6/1/2018	6	1,891,967	1,030,010
7/1/2018	7	1,528,850	363,117
8/1/2018	8	1,529,997	(1,147)
9/1/2018	9	2,018,861	(488,865)
10/1/2018	10	4,537,377	(2,518,516)
11/1/2018	11	8,301,215	(3,763,838)
12/1/2018	12	10,019,739	(1,718,524)
1/1/2019	1	9,406,781	612,958
2/1/2019	2	7,493,290	1,913,492
3/1/2019	3	6,669,766	823,524
4/1/2019	4	4,564,740	2,105,026
5/1/2019	5	3,081,991	1,482,749
6/1/2019	6	1,902,298	1,179,692
7/1/2019	7	1,492,840	409,459
8/1/2019	8	1,493,071	(232)
9/1/2019	9	2,125,346	(632,275)
10/1/2019	10	4,765,484	(2,640,138)
11/1/2019	11	8,398,923	(3,633,438)
12/1/2019	12	10,227,069	(1,828,147)
1/1/2020	1		

		Current Methodology	Proposed Methodology
1/1/2009	2009	8,592,846	8,898,787
2/1/2009	2009	5,930,860	6,206,681
3/1/2009	2009	5,826,264	5,691,325
4/1/2009	2009	3,648,712	4,290,889
5/1/2009	2009	2,221,577	2,250,647
6/1/2009	2009	1,615,698	1,312,422
7/1/2009	2009	1,331,740	1,346,440
8/1/2009	2009	1,465,195	1,341,085
9/1/2009	2009	1,624,842	1,292,098
10/1/2009	2009	3,732,099	4,039,243
11/1/2009	2009	7,273,652	7,219,211
12/1/2009	2009	8,618,531	8,601,828
1/1/2010	2010	8,625,341	8,856,092
2/1/2010	2010	6,170,174	6,515,984
3/1/2010	2010	5,395,339	5,904,672
4/1/2010	2010	4,386,064	4,622,530
5/1/2010	2010	2,691,355	2,660,626
6/1/2010	2010	1,642,618	1,814,914
7/1/2010	2010	1,329,700	1,471,438
8/1/2010	2010	1,830,742	1,471,243
9/1/2010	2010	2,144,669	1,905,421
10/1/2010	2010	4,245,907	4,366,650
11/1/2010	2010	7,082,104	7,480,106
12/1/2010	2010	9,922,375	9,227,603
1/1/2011	2011	8,219,478	8,843,951
2/1/2011	2011	6,848,438	6,581,644
3/1/2011	2011	6,766,474	5,996,236
4/1/2011	2011	4,096,219	4,563,158
5/1/2011	2011	2,908,076	2,697,999
6/1/2011	2011	2,064,529	1,834,513
7/1/2011	2011	1,533,462	1,489,519
8/1/2011	2011	1,542,810	1,487,893
9/1/2011	2011	1,872,070	1,945,015
10/1/2011	2011	4,192,805	4,222,351
11/1/2011	2011	7,248,916	7,471,043
12/1/2011	2011	9,534,492	9,374,572
1/1/2012	2012	8,041,696	8,803,013
2/1/2012	2012	7,333,130	6,665,474
3/1/2012	2012	6,065,734	6,030,672
4/1/2012	2012	4,312,640	4,444,857
5/1/2012	2012	2,588,271	2,636,998
6/1/2012	2012	1,940,292	1,872,568
7/1/2012	2012	1,385,291	1,519,188
8/1/2012	2012	1,791,721	1,517,859
9/1/2012	2012	1,632,994	1,944,428
10/1/2012	2012	4,207,204	4,180,476
11/1/2012	2012	7,300,811	7,475,027
12/1/2012	2012	9,807,425	9,510,750



1/1/2013	2013	8,317,718	8,820,692
2/1/2013	2013	7,574,748	6,732,687
3/1/2013	2013	5,910,880	6,062,605
4/1/2013	2013	4,070,700	4,373,065
5/1/2013	2013	2,858,734	2,664,749
6/1/2013	2013	1,623,303	1,878,184
7/1/2013	2013	1,226,118	1,518,304
8/1/2013	2013	1,658,524	1,516,382
9/1/2013	2013	1,928,478	1,986,146
10/1/2013	2013	4,312,449	4,169,579
11/1/2013	2013	7,492,150	7,568,047
12/1/2013	2013	9,014,429	9,466,132
1/1/2014	2014	8,238,880	8,717,636
2/1/2014	2014	6,722,151	6,851,194
3/1/2014	2014	5,997,019	6,192,670
4/1/2014	2014	4,094,724	4,407,638
5/1/2014	2014	2,882,470	2,712,344
6/1/2014	2014	1,780,917	1,884,308
7/1/2014	2014	2,157,741	1,573,515
8/1/2014	2014	1,300,803	1,573,595
9/1/2014	2014	2,160,599	2,012,431
10/1/2014	2014	4,088,689	4,148,657
11/1/2014	2014	8,891,661	7,797,842
12/1/2014	2014	8,854,920	9,430,121
1/1/2015	2015	9,261,501	8,605,153
2/1/2015	2015	6,455,096	7,130,345
3/1/2015	2015	5,816,263	6,188,423
4/1/2015	2015	4,162,368	4,353,045
5/1/2015	2015	2,746,430	2,761,631
6/1/2015	2015	1,059,435	1,896,459
7/1/2015	2015	1,359,176	1,522,255
8/1/2015	2015	855,712	1,522,792
9/1/2015	2015	1,785,125	1,969,115
10/1/2015	2015	4,291,085	4,269,332
11/1/2015	2015	7,759,188	7,802,938
12/1/2015	2015	10,192,542	9,646,765
1/1/2016	2016	9,623,055	8,902,008
2/1/2016	2016	6,762,099	7,071,759
3/1/2016	2016	6,759,309	6,322,596
4/1/2016	2016	4,083,348	4,370,493
5/1/2016	2016	2,578,675	2,761,613
6/1/2016	2016	1,798,538	1,918,361
7/1/2016	2016	1,519,618	1,553,826
8/1/2016	2016	1,227,114	1,552,801
9/1/2016	2016	1,936,429	1,965,858
10/1/2016	2016	4,964,726	4,439,308
11/1/2016	2016	8,501,880	7,875,516
12/1/2016	2016	10,126,825	9,674,873
1/1/2017	2017	9,561,365	9,126,882
2/1/2017	2017	6,825,068	7,048,222
3/1/2017	2017	6,794,192	6,432,821

4/1/2017	2017	5,370,341	4,453,340
5/1/2017	2017	3,187,067	2,856,835
6/1/2017	2017	1,059,353	1,904,422
7/1/2017	2017	1,386,964	1,544,534
8/1/2017	2017	1,128,312	1,543,812
9/1/2017	2017	2,038,980	1,979,166
10/1/2017	2017	4,202,413	4,400,874
11/1/2017	2017	8,372,603	8,056,087
12/1/2017	2017	9,405,783	9,800,108
1/1/2018	2018	9,768,837	9,281,978
2/1/2018	2018	7,727,815	7,188,715
3/1/2018	2018	6,406,321	6,505,909
4/1/2018	2018	4,686,893	4,530,314
5/1/2018	2018	2,912,696	2,921,978
6/1/2018	2018	1,988,812	1,891,967
7/1/2018	2018	1,489,124	1,528,850
8/1/2018	2018	722,204	1,529,997
9/1/2018	2018	2,141,679	2,018,861
10/1/2018	2018	4,615,548	4,537,377
11/1/2018	2018	8,852,989	8,301,215
12/1/2018	2018	9,446,837	10,019,739
1/1/2019	2019	9,437,706	9,406,781
2/1/2019	2019	8,020,246	7,493,290
3/1/2019	2019	6,996,566	6,669,766
4/1/2019	2019	3,599,809	4,564,740
5/1/2019	2019	3,475,618	3,081,991
6/1/2019	2019	1,771,626	1,902,298
7/1/2019	2019	1,573,869	1,492,840
8/1/2019	2019	911,968	1,493,071
9/1/2019	2019	2,558,967	2,125,346
10/1/2019	2019	5,274,390	4,765,484
11/1/2019	2019	8,128,866	8,398,923
12/1/2019	2019	10,370,481	10,227,069

	Weather Normalized Therms		Year-over-year difference	
	Current Methodology	Proposed Methodology	Current Methodology	Proposed Methodology
2009	51,882,015	52,490,656		
2010	55,466,388	56,297,280	3,584,373	3,806,624
2011	56,827,769	56,507,893	1,361,380	210,613
2012	56,407,209	56,601,310	(420,560)	93,417
2013	55,988,231	56,756,572	(418,977)	155,263
2014	57,170,573	57,301,951	1,182,341	545,379
2015	55,743,920	57,668,251	(1,426,653)	366,300
2016	59,881,617	58,409,012	4,137,697	740,760
2017	59,332,440	59,147,105	(549,176)	738,094
2018	60,759,755	60,256,900	1,427,315	1,109,795
2019	62,120,112	61,621,600	1,360,357	1,364,700
			1,712,158	1,041,601