

## Appendix E

### Current & Alternative Resources

2025 WA IRP

## **Appendix E - Introduction**

The purpose of this document is to transparently describe the transportation and supply inputs that were utilized in the preferred portfolio described in the Resource Integration chapter. Pages 3-6 of this appendix provides annual commodity costs, annual supply amounts, and the annual unit commodity cost at a dollar per dekatherm for supply and carbon compliance options. Pages 7-13 provides fuel rates, Maximum daily quantity (MDQ), reservation rates, and transportation rates for Cascade's transportation contracts. Also, pages 14-33 show the Company's current Annual Hedge Plan.

### **Types of Supply - Summary**

- Base – This is an annual supply that we must take if we contract it.
- Winter – This is another supply that we must take but is only available during the winter season (November-March).
- Day Gas – Can be broken down by winter and summer day gas. We only have to take what we need of this type of gas, and because it is more flexible, it is more expensive than Base or Winter gas.
- Peak – Used to serve demand when all other options are exhausted. It is also the most expensive type of gas.



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Supply	Data Item	2019	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
AECC INDEX	Max Take: Daily by Supply	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
AECC INDEX	Take: Monthly by Supply (000)	5,558	5,540	5,475	5,436	5,440	5,320	5,276	5,303	5,250	5,268	5,227	5,224
AECC INDEX	Commodity Cost (000) (\$/MWh)	\$ 26,521.24	\$ 30,835.24	\$ 32,864.62	\$ 34,788.50	\$ 35,175.48	\$ 36,851.48	\$ 38,359.30	\$ 40,040.75	\$ 42,894.04	\$ 46,812.70	\$ 49,279.89	\$ 47,968.57
AECC INDEX	Unit Community Cost (000) (\$/MWh)	\$ 4.76	\$ 5.57	\$ 5.97	\$ 6.40	\$ 6.46	\$ 6.81	\$ 7.21	\$ 7.55	\$ 7.88	\$ 8.51	\$ 8.80	\$ 9.17
AECC INDEX	Max Take: Daily by Supply	3,362	3,281	3,200	3,118	3,101	3,059	3,373	3,315	3,322	3,179	3,519	3,619
AECC INDEX	Commodity Cost (000) (\$/MWh)	\$ 16,069.69	\$ 18,175.50	\$ 19,688.73	\$ 19,954.56	\$ 20,614.31	\$ 21,340.73	\$ 23,194.10	\$ 25,029.31	\$ 26,512.19	\$ 27,055.78	\$ 31,145.98	\$ 31,183.04
AECC INDEX	Unit Community Cost (000) (\$/MWh)	\$ 4.76	\$ 5.57	\$ 5.97	\$ 6.40	\$ 6.46	\$ 6.81	\$ 7.21	\$ 7.55	\$ 7.88	\$ 8.51	\$ 8.80	\$ 9.17
Blue Hydrogen	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
Blue Hydrogen	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
Blue Hydrogen	Unit Community Cost (000) (\$/MWh)	\$ 38.97	\$ 43.98	\$ 45.73	\$ 47.29	\$ 48.90	\$ 50.57	\$ 52.30	\$ 54.05	\$ 55.84	\$ 57.69	\$ 59.61	\$ 61.59
Carbon Capture - 100-200 MMbtu/hr	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Capture - 100-200 MMbtu/hr	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	185	185	185	185
Carbon Capture - 100-200 MMbtu/hr	Commodity Cost (000)	-	-	-	-	-	-	-	-	\$ 4,458.89	\$ 4,614.44	\$ 4,771.83	\$ 4,936.61
Carbon Capture - 100-200 MMbtu/hr	Unit Community Cost (000) (\$/MWh)	\$ 12.94	\$ 18.03	\$ 19.61	\$ 20.30	\$ 20.99	\$ 21.71	\$ 22.47	\$ 23.27	\$ 24.08	\$ 24.92	\$ 25.77	\$ 26.66
Carbon Capture - 25-50 MMbtu/hr	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Capture - 25-50 MMbtu/hr	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	389	389	389	389
Carbon Capture - 25-50 MMbtu/hr	Commodity Cost (000)	-	-	-	-	-	-	-	-	\$ 8,159.82	\$ 8,408.35	\$ 8,709.68	\$ 9,056.69
Carbon Capture - 25-50 MMbtu/hr	Unit Community Cost (000) (\$/MWh)	\$ 10.62	\$ 15.84	\$ 17.13	\$ 17.71	\$ 18.30	\$ 18.92	\$ 19.57	\$ 20.25	\$ 20.95	\$ 21.66	\$ 22.39	\$ 23.15
Carbon Capture - 50-100 MMbtu/hr	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Capture - 50-100 MMbtu/hr	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	646	646	646	646
Carbon Capture - 50-100 MMbtu/hr	Commodity Cost (000)	-	-	-	-	-	-	-	-	\$ 14,492.25	\$ 14,996.21	\$ 15,508.64	\$ 16,042.91
Carbon Capture - 50-100 MMbtu/hr	Unit Community Cost (000) (\$/MWh)	\$ 11.70	\$ 16.78	\$ 18.29	\$ 18.93	\$ 19.58	\$ 20.24	\$ 20.94	\$ 21.68	\$ 22.43	\$ 23.21	\$ 24.00	\$ 24.83
HUNT DAY 5	Max Take: Daily by Supply	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
HUNT DAY 5	Commodity Cost (000)	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322	\$ 2,322
HUNT DAY 5	Unit Community Cost (000) (\$/MWh)	\$ 7,919.92	\$ 6,780.72	\$ 7,502.39	\$ 7,770.68	\$ 7,978.14	\$ 13,500.93	\$ 15,748.48	\$ 9,801.04	\$ 8,584.63	\$ 10,517.34	\$ 8,501.35	\$ 10,561.60
HUNT DAY 5	Max Take: Daily by Supply	\$ 6.48	\$ 7.29	\$ 7.79	\$ 8.26	\$ 8.39	\$ 8.84	\$ 9.40	\$ 9.69	\$ 10.14	\$ 10.68	\$ 11.12	\$ 11.48
HUNT DAY 5	Commodity Cost (000)	709	709	709	709	709	709	709	709	709	709	709	709
HUNT DAY 5	Unit Community Cost (000) (\$/MWh)	\$ 4,628.86	\$ 3,361.79	\$ 3,007.08	\$ 3,093.91	\$ 2,548.80	\$ 2,051.18	\$ 2,478.74	\$ 2,169.97	\$ 2,163.95	\$ 3,119.10	\$ 2,481.43	\$ 2,441.46
HUNT INDEX	Max Take: Daily by Supply	6,531	7,384	7,884	8,311	8,841	8,890	9,485	9.74	\$ 10.19	\$ 10.73	\$ 11.17	\$ 11.53
HUNT INDEX	Commodity Cost (000)	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000
HUNT INDEX	Unit Community Cost (000) (\$/MWh)	\$ 71,356.86	\$ 12,000.38	-	-	-	-	-	-	-	-	-	-
HUNT INDEX	Max Take: Daily by Supply	\$ 6.28	\$ 7.09	\$ 7.59	\$ 8.06	\$ 8.19	\$ 8.74	\$ 9.20	\$ 9.49	\$ 9.94	\$ 10.48	\$ 10.92	\$ 11.28
HUNT INDEX	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
HUNT INDEX	Unit Community Cost (000) (\$/MWh)	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5
HUNT INDEX	Max Take: Daily by Supply	\$ 6.28	\$ 7.09	\$ 7.59	\$ 8.06	\$ 8.19	\$ 8.74	\$ 9.20	\$ 9.49	\$ 9.94	\$ 10.48	\$ 10.92	\$ 11.28
HUNT INDEX	Commodity Cost (000)	\$ 6.28	\$ 7.09	\$ 7.59	\$ 8.06	\$ 8.19	\$ 8.74	\$ 9.20	\$ 9.49	\$ 9.94	\$ 10.48	\$ 10.92	\$ 11.28
HUNT INDEX	Unit Community Cost (000) (\$/MWh)	\$ 6.28	\$ 7.09	\$ 7.59	\$ 8.06	\$ 8.19	\$ 8.74	\$ 9.20	\$ 9.49	\$ 9.94	\$ 10.48	\$ 10.92	\$ 11.28
HUNT INDEX	Max Take: Daily by Supply	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
HUNT INDEX	Commodity Cost (000)	\$ 12.2	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7
HUNT INDEX	Unit Community Cost (000) (\$/MWh)	\$ 86.47	\$ 51.90	\$ 5	\$ 337.16	\$ 317.01	\$ 998.92	\$ 5,244.45	\$ 993.42	\$ 920.84	\$ 1,128.95	\$ 384.06	\$ 953.98
HUNT INDEX	Max Take: Daily by Supply	\$ 7.03	\$ 7.94	\$ 8.14	\$ 8.81	\$ 8.94	\$ 9.40	\$ 9.95	\$ 10.24	\$ 10.69	\$ 11.20	\$ 11.67	\$ 12.03
Non-Cost	Take: Monthly by Supply (000)	12,665	12,728	12,792	12,856	12,920	12,984	13,048	13,115	13,180	13,246	13,312	13,379
Non-Cost	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
Non-Cost	Unit Community Cost (000) (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
OR CCN	Max Take: Daily by Supply	43	43	30	30	26	26	23	23	22	22	20	21
OR CCN	Commodity Cost (000)	\$ 9,136.80	\$ 9,956.34	\$ 7,091.14	\$ 7,471.50	\$ 6,820.35	\$ 7,099.18	\$ 6,556.20	\$ 6,814.13	\$ 6,660.97	\$ 6,921.94	\$ 5,112.32	\$ 7,341.18
OR CCN	Unit Community Cost (000) (\$/MWh)	\$ 224.64	\$ 233.55	\$ 242.78	\$ 252.38	\$ 262.35	\$ 272.71	\$ 283.45	\$ 294.61	\$ 306.21	\$ 318.25	\$ 330.74	\$ 343.72
Oregon Allowances	Max Take: Daily by Supply	204	180	172	158	139	125	107	93	74	60	42	28
Oregon Allowances	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
Oregon Allowances	Unit Community Cost (000) (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
Oregon Allowances	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-1	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-1	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-1	Unit Community Cost (000) (\$/MWh)	\$ 263.25	\$ 273.02	\$ 281.13	\$ 291.57	\$ 304.36	\$ 315.60	\$ 327.29	\$ 339.44	\$ 352.01	\$ 365.10	\$ 378.67	\$ 392.77
RNG-AMA-2	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-2	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-2	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-2	Unit Community Cost (000) (\$/MWh)	\$ 189.14	\$ 196.09	\$ 203.23	\$ 210.58	\$ 218.16	\$ 226.01	\$ 234.24	\$ 242.74	\$ 251.52	\$ 260.68	\$ 270.11	\$ 279.94
RNG-AMA-3	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-3	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-3	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-3	Unit Community Cost (000) (\$/MWh)	\$ 157.90	\$ 163.73	\$ 169.65	\$ 175.73	\$ 181.98	\$ 188.50	\$ 195.27	\$ 202.29	\$ 209.53	\$ 217.07	\$ 224.84	\$ 232.82
RNG-AMA-4	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-4	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-4	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-4	Unit Community Cost (000) (\$/MWh)	\$ 92.50	\$ 95.87	\$ 99.31	\$ 102.81	\$ 106.38	\$ 110.00	\$ 113.66	\$ 117.36	\$ 121.06	\$ 124.83	\$ 128.72	\$ 132.77
RNG-AMA-5	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-5	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-5	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-AMA-5	Unit Community Cost (000) (\$/MWh)	\$ 79.70	\$ 82.67	\$ 85.63	\$ 88.63	\$ 91.69	\$ 94.87	\$ 98.16	\$ 101.62	\$ 105.13	\$ 108.79	\$ 112.52	\$ 116.43
RNG-FW-1	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-1	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-1	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-1	Unit Community Cost (000) (\$/MWh)	\$ 180.87	\$ 192.51	\$ 199.39	\$ 206.47	\$ 213.77	\$ 221.37	\$ 229.25	\$ 237.43	\$ 245.86	\$ 254.66	\$ 263.73	\$ 273.14
RNG-FW-2	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-2	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-2	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-2	Unit Community Cost (000) (\$/MWh)	\$ 134.16	\$ 138.96	\$ 143.88	\$ 148.94	\$ 154.15	\$ 159.57	\$ 165.19	\$ 171.04	\$ 177.03	\$ 183.30	\$ 189.79	\$ 196.41
RNG-FW-3	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-3	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-3	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-FW-3	Unit Community Cost (000) (\$/MWh)	\$ 96.47	\$ 99.86	\$ 103.41	\$ 107.02	\$ 110.72	\$ 114.50	\$ 118.46	\$ 122.76	\$ 127.02	\$ 131.46	\$ 136.02	\$ 140.74
RNG-LFG-1	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-1	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-1	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-1	Unit Community Cost (000) (\$/MWh)	\$ 63.83	\$ 66.32	\$ 68.91	\$ 71.58	\$ 74.33	\$ 77.23	\$ 80.30	\$ 83.31	\$ 86.53	\$ 89.89	\$ 93.33	\$ 96.93
RNG-LFG-2	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-2	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-2	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-2	Unit Community Cost (000) (\$/MWh)	\$ 32.41	\$ 33.68	\$ 34.95	\$ 36.23	\$ 37.56	\$ 38.94	\$ 40.38	\$ 41.86	\$ 43.37	\$ 44.94	\$ 46.55	\$ 48.23
RNG-LFG-3	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-3	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-3	Commodity Cost (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-3	Unit Community Cost (000) (\$/MWh)	\$ 23.84	\$ 24.22	\$ 25.13	\$ 26.04	\$ 26.97	\$ 27.94	\$ 28.95	\$ 29.98	\$ 31.03	\$ 32.13	\$ 33.24	\$ 34.37
RNG-LFG-4	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-4	Take: Monthly by Supply (000)	-	-	-	-	-	-	-	-	-	-	-	-
RNG-LFG-4	Commodity Cost (000)	\$ 6,004	\$ 4,764	\$ 4,932	\$ 6,303	\$ 6,695	\$ 6,780	\$ 6,851	\$ 6,910	\$ 6,960	\$ 7,001	\$ 7,035	\$ 7,068
RNG-LFG-4	Unit Community Cost (000) (\$/MWh)	\$ 86,758.61	\$ 91,234.63	\$ 110,681.89	\$ 112,481.17	\$ 145,677.54	\$ 152,679.07	\$ 156,762.99					

Supply	Data Item	2019	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
ROCK DAY W	Commodity Cost (\$/MWh)	\$ 29,252.77	\$ 38,792.84	\$ 39,214.14	\$ 44,924.68	\$ 42,542.95	\$ 52,074.69	\$ 52,239.22	\$ 52,642.68	\$ 60,714.24	\$ 57,534.93	\$ 50,290.76	\$ 50,879.41
ROCK DAY W	Unit Commodity Cost (\$/MWh)	\$ 6.73	\$ 7.19	\$ 7.55	\$ 8.00	\$ 8.34	\$ 8.69	\$ 9.21	\$ 9.36	\$ 9.79	\$ 10.38	\$ 10.85	\$ 11.01
ROCK INDEX	Max Take: Daily by Supply	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
ROCK INDEX	Take: Monthly by Supply (\$/MWh)	-	\$ 9,520	\$ 8,784	\$ 9,299	\$ 9,022	\$ 7,385	\$ 5,357	\$ 4,603	\$ 8,639	\$ 7,351	\$ 6,555	\$ 7,682
ROCK INDEX	Commodity Cost (\$/MWh)	\$ -	\$ 64,069.94	\$ 64,121.23	\$ 72,047.48	\$ 71,086.14	\$ 62,353.83	\$ 47,994.33	\$ 76,552.97	\$ 82,419.49	\$ 74,097.10	\$ 88,974.81	\$ 82,121.72
ROCK INDEX	Unit Commodity Cost (\$/MWh)	\$ 6.48	\$ 6.84	\$ 7.00	\$ 7.75	\$ 7.89	\$ 8.41	\$ 8.06	\$ 9.11	\$ 8.14	\$ 8.13	\$ 10.40	\$ 10.74
ROCK INDEX W	Max Take: Daily by Supply	5,867	5,284	6,769	5,795	6,523	6,627	7,708	6,706	4,393	6,095	6,937	7,293
ROCK INDEX W	Take: Monthly by Supply (\$/MWh)	\$ 38,018.74	\$ 34,689.23	\$ 49,339.53	\$ 44,911.17	\$ 51,464.02	\$ 55,953.34	\$ 69,066.91	\$ 54,532.47	\$ 60,991.41	\$ 70,836.92	\$ 72,148.44	\$ 78,466.44
ROCK INDEX W	Unit Commodity Cost (\$/MWh)	\$ 6.48	\$ 6.84	\$ 7.10	\$ 7.75	\$ 7.89	\$ 8.44	\$ 8.96	\$ 9.11	\$ 8.14	\$ 8.13	\$ 10.40	\$ 10.74
ROCK PIAK	Max Take: Daily by Supply	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
ROCK PIAK	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
ROCK PIAK	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
ROCK PIAK	Unit Commodity Cost (\$/MWh)	\$ 7.21	\$ 7.69	\$ 8.05	\$ 8.50	\$ 8.64	\$ 9.19	\$ 9.71	\$ 9.86	\$ 10.29	\$ 10.88	\$ 11.15	\$ 11.51
RTC - AA-1	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-1	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-1	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-1	Unit Commodity Cost (\$/MWh)	\$ 365.94	\$ 380.11	\$ 394.85	\$ 410.12	\$ 425.96	\$ 442.48	\$ 459.68	\$ 477.60	\$ 496.18	\$ 515.62	\$ 535.79	\$ 556.80
RTC - AA-2	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-2	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-2	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-2	Unit Commodity Cost (\$/MWh)	\$ 258.47	\$ 268.22	\$ 278.36	\$ 288.87	\$ 299.73	\$ 311.05	\$ 322.84	\$ 335.07	\$ 347.77	\$ 361.02	\$ 374.74	\$ 389.02
RTC - AA-3	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-3	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-3	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-3	Unit Commodity Cost (\$/MWh)	\$ 213.96	\$ 223.02	\$ 232.34	\$ 238.04	\$ 247.81	\$ 257.08	\$ 266.87	\$ 276.68	\$ 287.03	\$ 297.80	\$ 308.98	\$ 320.60
RTC - AA-4	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-4	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-4	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-4	Unit Commodity Cost (\$/MWh)	\$ 122.39	\$ 126.93	\$ 131.60	\$ 136.38	\$ 141.29	\$ 146.41	\$ 151.73	\$ 157.24	\$ 162.93	\$ 168.87	\$ 174.97	\$ 181.30
RTC - AA-5	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-5	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-5	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - AA-5	Unit Commodity Cost (\$/MWh)	\$ 104.81	\$ 108.89	\$ 112.88	\$ 116.76	\$ 120.92	\$ 125.28	\$ 129.81	\$ 134.48	\$ 139.30	\$ 144.34	\$ 149.52	\$ 154.87
RTC - FW-1	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-1	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-1	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-1	Unit Commodity Cost (\$/MWh)	\$ 251.14	\$ 260.41	\$ 270.03	\$ 279.99	\$ 290.28	\$ 301.00	\$ 312.14	\$ 323.71	\$ 335.67	\$ 348.16	\$ 361.09	\$ 374.53
RTC - FW-2	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-2	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-2	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-2	Unit Commodity Cost (\$/MWh)	\$ 179.46	\$ 186.03	\$ 192.83	\$ 199.87	\$ 207.11	\$ 214.65	\$ 222.40	\$ 230.41	\$ 239.03	\$ 247.80	\$ 256.85	\$ 266.24
RTC - FW-3	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-3	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-3	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - FW-3	Unit Commodity Cost (\$/MWh)	\$ 127.71	\$ 132.37	\$ 137.18	\$ 142.14	\$ 147.24	\$ 152.55	\$ 158.06	\$ 163.78	\$ 169.66	\$ 175.82	\$ 182.16	\$ 188.72
RTC - High LFG	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - High LFG	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - High LFG	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - High LFG	Unit Commodity Cost (\$/MWh)	\$ 66.88	\$ 69.59	\$ 72.42	\$ 75.31	\$ 78.33	\$ 81.48	\$ 84.75	\$ 88.14	\$ 91.66	\$ 95.35	\$ 99.16	\$ 103.12
RTC - High WW	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - High WW	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - High WW	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - High WW	Unit Commodity Cost (\$/MWh)	\$ 67.51	\$ 70.32	\$ 73.21	\$ 76.10	\$ 79.05	\$ 82.14	\$ 85.40	\$ 88.79	\$ 92.25	\$ 95.89	\$ 99.61	\$ 103.49
RTC - Low LFG	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - Low LFG	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - Low LFG	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - Low LFG	Unit Commodity Cost (\$/MWh)	\$ 24.56	\$ 25.51	\$ 26.49	\$ 27.47	\$ 28.48	\$ 29.51	\$ 30.61	\$ 31.71	\$ 32.83	\$ 34.03	\$ 35.24	\$ 36.46
RTC - Low WW	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
RTC - Low WW	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - Low WW	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
RTC - Low WW	Unit Commodity Cost (\$/MWh)	\$ 22.88	\$ 23.83	\$ 24.78	\$ 25.67	\$ 26.52	\$ 27.42	\$ 28.37	\$ 29.36	\$ 30.33	\$ 31.34	\$ 32.33	\$ 33.35
Solar - Green Hydrogen	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
Solar - Green Hydrogen	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
Solar - Green Hydrogen	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
Solar - Green Hydrogen	Unit Commodity Cost (\$/MWh)	\$ 46.76	\$ 48.55	\$ 49.82	\$ 46.38	\$ 47.43	\$ 48.61	\$ 49.83	\$ 46.80	\$ 71.60	\$ 73.42	\$ 75.37	\$ 77.25
STANRA-ALGN	Max Take: Daily by Supply	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
STANRA-ALGN	Take: Monthly by Supply (\$/MWh)	\$ 337	\$ 365	\$ 383	\$ 364	\$ 364	\$ 364	\$ 364	\$ 364	\$ 364	\$ 364	\$ 364	\$ 364
STANRA-ALGN	Commodity Cost (\$/MWh)	\$ 1,950.46	\$ 2,398.05	\$ 2,524.48	\$ 2,693.60	\$ 2,746.44	\$ 2,883.83	\$ 3,024.84	\$ 3,112.30	\$ 3,268.72	\$ 3,408.44	\$ 3,549.05	\$ 3,701.88
STANRA-ALGN	Unit Commodity Cost (\$/MWh)	\$ 5.78	\$ 6.37	\$ 6.87	\$ 7.40	\$ 7.46	\$ 7.93	\$ 8.31	\$ 8.55	\$ 9.18	\$ 9.51	\$ 9.85	\$ 10.37
ST4T2 INDEX	Max Take: Daily by Supply	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
ST4T2 INDEX	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
ST4T2 INDEX	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
ST4T2 INDEX	Unit Commodity Cost (\$/MWh)	\$ 1.14	\$ 1.75	\$ 2.08	\$ 2.37	\$ 2.32	\$ 2.67	\$ 2.94	\$ 3.03	\$ 3.27	\$ 3.60	\$ 3.81	\$ 3.94
Turquoise Hydrogen - Microwave	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
Turquoise Hydrogen - Microwave	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
Turquoise Hydrogen - Microwave	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
Turquoise Hydrogen - Microwave	Unit Commodity Cost (\$/MWh)	\$ 73.20	\$ 74.87	\$ 77.69	\$ 80.60	\$ 83.56	\$ 86.69	\$ 90.00	\$ 93.70	\$ 97.28	\$ 100.98	\$ 104.82	\$ 108.51
WA Auction	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
WA Auction	Take: Monthly by Supply (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA Auction	Commodity Cost (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA NC Allowances	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
WA NC Allowances	Take: Monthly by Supply (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA NC Allowances	Commodity Cost (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA NC Allowances	Unit Commodity Cost (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA Offsets	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
WA Offsets	Take: Monthly by Supply (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA Offsets	Commodity Cost (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA Offsets	Unit Commodity Cost (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA Price Ceiling/Secondary Market	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
WA Price Ceiling/Secondary Market	Take: Monthly by Supply (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA Price Ceiling/Secondary Market	Commodity Cost (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
WA Price Ceiling/Secondary Market	Unit Commodity Cost (\$/MWh)	-	-	-	-	-	-	-	-	-	-	-	-
Wind - Green Hydrogen	Max Take: Daily by Supply	-	-	-	-	-	-	-	-	-	-	-	-
Wind - Green Hydrogen	Take: Monthly by Supply (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
Wind - Green Hydrogen	Commodity Cost (\$/MWh)	\$ -	-	-	-	-	-	-	-	-	-	-	-
Wind - Green Hydrogen	Unit Commodity Cost (\$/MWh)	\$ 65.25	\$ 68.83	\$ 68.26	\$ 70.19	\$ 72.40	\$ 74.71	\$ 77.10	\$ 79.32	\$ 101.56	\$ 104.82	\$ 108.14	\$ 111.62

[illegible]

Transport	Data Item	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
NWP100320MEOR	First of Month MQQ by Transport (dth)	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069
NWP100320MEOR	Fuel Volume by Transport (dth)	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x
NWP100320MEOR	Rate: Transport by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320MEOR	Rate: Transportation by Transport (S/dth)	\$	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
NWP100320MEOR	First of Month MQQ by Transport (dth)	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107
NWP100320MEOR	Fuel Volume by Transport (dth)	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x
NWP100320MEOR	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320MEOR	Rate: Transportation by Transport (S/dth)	\$	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
NWP100320MEWA	First of Month MQQ by Transport (dth)	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109	2,109
NWP100320MEWA	Fuel Volume by Transport (dth)	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x	0.840x
NWP100320MEWA	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320MEWA	Rate: Transportation by Transport (S/dth)	\$	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
NWP100320SM5	First of Month MQQ by Transport (dth)	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502
NWP100320SM5	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320SM5	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320SM5	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320STN	First of Month MQQ by Transport (dth)	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107	3,107
NWP100320STN	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320STN	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320STN	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	First of Month MQQ by Transport (dth)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
NWP100320T2W	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320T2W	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	First of Month MQQ by Transport (dth)	5,974	5,974	5,974	5,974	5,974	5,974	5,974	5,974	5,974	5,974	5,974	5,974	5,974	5,974
NWP100320T2W	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320T2W	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	First of Month MQQ by Transport (dth)	941	941	941	941	941	941	941	941	941	941	941	941	941	941
NWP100320T2W	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320T2W	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	First of Month MQQ by Transport (dth)	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149
NWP100320T2W	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320T2W	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2W	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2S	First of Month MQQ by Transport (dth)	5,198	5,198	5,198	5,198	5,198	5,198	5,198	5,198	5,198	5,198	5,198	5,198	5,198	5,198
NWP100320T2S	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320T2S	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2S	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2S	First of Month MQQ by Transport (dth)	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502	10,502
NWP100320T2S	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100320T2S	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100320T2S	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100308B3	First of Month MQQ by Transport (dth)	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
NWP100308B3	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100308B3	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100308B3	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100308B3	First of Month MQQ by Transport (dth)	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763
NWP100308B3	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100308B3	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100308B3	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100308B3W	First of Month MQQ by Transport (dth)	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763
NWP100308B3W	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP100308B3W	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP100308B3W	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090C	First of Month MQQ by Transport (dth)	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763	27,763
NWP1003090C	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP1003090C	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090C	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090ME	First of Month MQQ by Transport (dth)	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160	6,160
NWP1003090ME	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP1003090ME	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090ME	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2W	First of Month MQQ by Transport (dth)	29	29	29	29	29	29	29	29	29	29	29	29	29	29
NWP1003090T2W	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP1003090T2W	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2W	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2W	First of Month MQQ by Transport (dth)	310	310	310	310	310	310	310	310	310	310	310	310	310	310
NWP1003090T2W	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP1003090T2W	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2W	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2S	First of Month MQQ by Transport (dth)	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989	8,989
NWP1003090T2S	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP1003090T2S	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2S	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2S	First of Month MQQ by Transport (dth)	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191
NWP1003090T2S	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP1003090T2S	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2S	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2S	First of Month MQQ by Transport (dth)	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191	6,191
NWP1003090T2S	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x	0.000x
NWP1003090T2S	Rate: Di by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2S	Rate: Transportation by Transport (S/dth)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
NWP1003090T2S	First of Month MQQ by Transport (dth)	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050
NWP1003090T2S	Fuel Volume by Transport (dth)	0.000x	0.000x	0.000x	0.000x										



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Page 13



*In the Community to Serve®*

# ANNUAL HEDGE PLAN

(UG-\_\_\_\_\_)

AUGUST 26<sup>TH</sup> 2024

## Table of Contents

I.	Program Goals .....	2
II.	Organizational Structure .....	3
III.	Hedge Program.....	5
IV.	Material Changes to Hedge Program .....	9
V.	Renewable Natural Gas .....	9
VI.	2024 HEP Meeting and Final Recommendations .....	10
VII.	Data Driven Hedging.....	13
VIII.	Procurement Strategies.....	14
IX.	Retrospective Report of 2023.....	16
X.	Market Summary .....	17
XI.	Conclusion .....	19
XI.	Appendices	
	a. Resource Planning Monthly Guidance – August 2024	
	b. Mark To Market Calculator - 7-24-2024	
	c. Hedge Plan Process Flow Chart	
	d. Project Team Meeting Minutes - July 2024	
	e. CNGC Book Model August 2024	
	f. Var to Life 7-29-24	
	g. Hedge Schedule Chart	
	h. Retrospective Report	
	i. Compliance Matrix	

## I. Program Goals

On March 13, 2017, the Washington Utilities and Transportation Commission (WUTC) issued its Policy and Interpretative Statement on Local Distribution Companies' (LDCs) Natural Gas Hedging Practices in Docket UG-132019. This statement provided guidance on how LDCs should develop and implement more robust risk management strategies, analyses, and reporting related to hedging activities.

In Docket UG-132019, the WUTC reviewed hedging practices by utilities in the State of Washington and found that local LDCs experienced costs associated with price risk mitigation techniques upwards of \$1.1 billion over a ten-year period. The WUTC discovered that many of these costs were caused by adherence to programmatic "set-it-and-forget-it" price risk mitigation practices (herein called hedging or hedging strategies) that did not respond well to the downward trending market which prevailed during that timeframe. The WUTC concluded that, while hedging is necessary to limit upside price risk, an effective program should have the flexibility to mitigate downside hedge losses by adjusting to changing market conditions. To achieve this goal, the Commission identified a need for a risk-responsive hedge plan with a robust analytical framework. Cascade Natural Gas (CNGC or Company) has committed to developing, maintaining, and adapting risk responsive hedging policies, processes, and applications. Satisfying the Commission's natural gas risk management goal is the purpose of the work associated with this document.

In preparing the Company's hedging document, CNGC has relied on the following points when interpreting the WUTC hedging policy statement:

- WUTC affirmed its preference that natural gas LDCs utilize risk responsive hedging practices.
- Hedging practices should not be speculative in nature. Hedging is an activity designed to reduce price uncertainty and manage foreseen and unforeseen price risk. Hedging is not an attempt to realize profits based on predictions of anticipated market movements.
- The Commission believes that, while there is no right mix of methods that may be applied unilaterally due to utility specific operations, LDCs must reasonably plan for market volatility and appropriately react to balance the benefits of hedging against exposure to hedge losses. This includes recognizing dual protection from upside price risk and downside hedge losses, along with annual validation of acceptable hedging outcomes.
- Based on the WUTC hedging policy statement, the Company is aware that the WUTC views the Commission requested Gettings White Paper<sup>1</sup> as a resource in helping LDCs develop more robust risk management programs.

In response to Docket UG-132019, CNGC's Gas Supply Oversight Committee (GSOC)<sup>2</sup> took the following actions in order to achieve full compliance the WUTC's goals. First, it formed a project team that would completely redesign the existing Hedge Program. Second, GSOC approved the hiring of an outside consultant, Gelber and Associates ("Gelber" or "G&A"), to assist the project team with the Hedge Program overhaul. Gelber has more than two decades of experience in helping utilities create and manage their hedge programs.

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<sup>1</sup> Gettings, Michael, "Natural Gas Utility Hedging Practices and Regulatory Oversight," (Washington Utilities and Transportation Commission Whitepaper, 2015)

<sup>2</sup> CNGC's Gas Supply Oversight Committee (GSOC) oversees the Company's gas supply purchasing and hedging strategy. Members of GSOC include Company senior management from Gas Supply, Regulatory, Finance and Operations.



The CNGC Hedging Program was designed to satisfy the WUTC’s objectives in a manner that is feasible and economical given CNGC’s size, structure, expertise, and customer base. In January of 2019, GSOC approved the current Company Hedge Program, while on April 29<sup>th</sup>, 2024, the newest Hedge Execution Plan (HEP) was approved. Components of both the Hedge Program and the current HEP are discussed in this document, the 2024 Annual Hedge Plan (“Hedge Plan “or “Plan”).

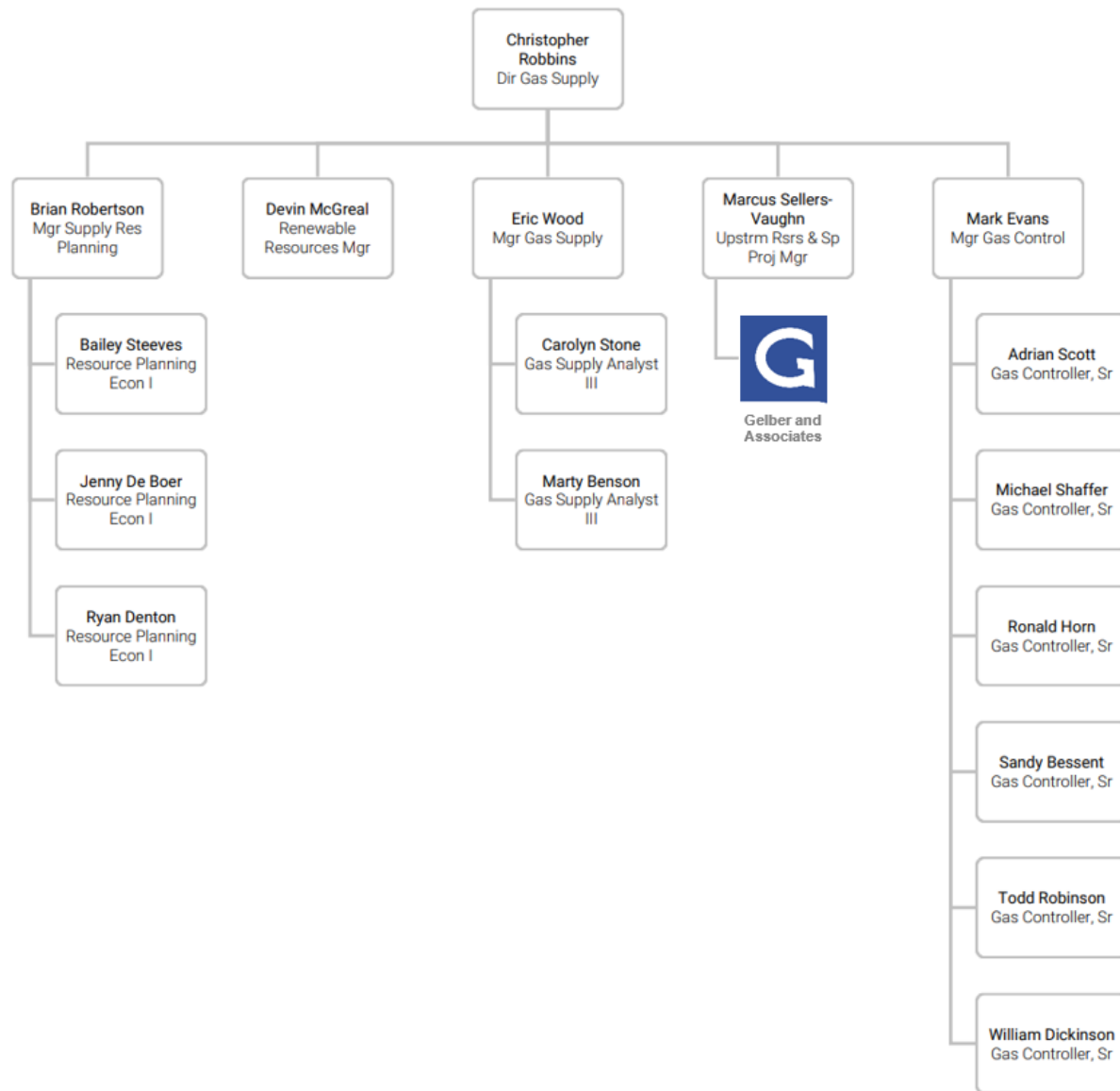
## II. Organizational Structure

CNGC’s GSOC has ultimate authority over the Company’s Hedge Plan. This power is granted by the Company’s Management Policy Committee. Key members of CNGC’s Gas Supply department are responsible for executing the strategy set by GSOC, while individuals in the Resource Planning group of the Gas Supply department serve in analytical support and audit roles. Figure 1 outlines the personnel that will be responsible for oversight, execution, and support for the 2024 Hedge Plan. Figure 2 provides a condensed organization chart for the Director of Gas Supply and individuals that report to him who are responsible for executing the Hedge Plan.

**Figure 1 - Hedge Plan Roles**

<b>ROLE</b>	<b>ASSIGNED TO</b>	<b>TITLE(S)</b>
Corporate Authority to Hedge	Nicole Kivisto Garret Senger Jason Volmer	President MDUR Chief Utilities Officer VP, CFO & Treasurer MDUR
Oversight and authorization of CNGC’s Hedge Execution Plan (HEP): Gas Supply Oversight Committee	Scott Madison Mark Chiles Pat Darras Tammy Nygard Chris Robbins Lori Blattner	EVP, Bus Dev & Gas Supply (Chair) VP, Reg Affrs, Cust Srv, Admn VP, Engineering & Operation Services Controller - Utility Group Dir, Gas Supply Dir, Regulatory Affairs
Final Transaction Approval (upon receipt of signed agreement from counterparty)	Scott Madison	EVP, Business Development & Gas Supply
Final Transaction Approval (upon receipt of signed agreement from counterparty) Backup	Tammy Nygard	Controller - Utility Group
Hedge Execution Director	Chris Robbins	Director, Gas Supply
Delegated Execution Primary	Eric Wood	Manager, Gas Supply
Delegated Execution Secondary	Mark Sellers-Vaughn	Upstream Res and Spec Proj Manager
Deal Capture	Carolyn Stone	Gas Supply Analyst III
Confirmation Review Primary	Brian Robertson	Manager, Supply Resource Planning
Confirmation Review Secondary	Jenny De Boer	Resource Planning Economist I
Annual Hedge Plan Approval	Chris Robbins	Director, Gas Supply

**Figure 2 - Hedge Team Organization Chart**



\*Gelber and Associates are Cascade's hedging consultants; their activities are coordinated by Upstream Resources & Special Projects Manager.

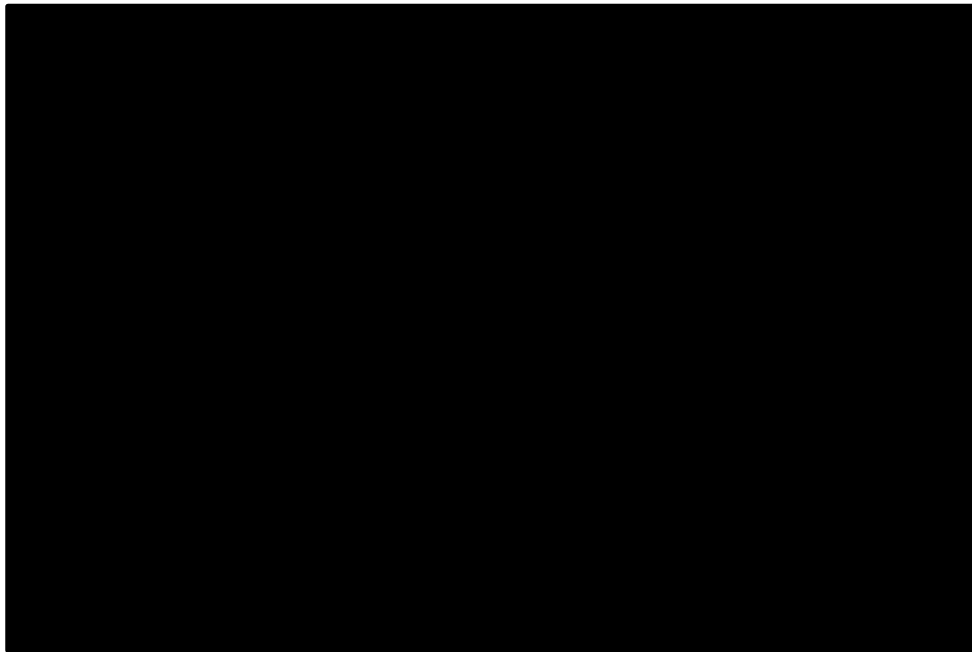
### III. Hedge Program

The philosophy behind the Company's Hedging Program is to accomplish the following goals:

1. Provide essential price protection against adverse price increases which have detrimental impacts for CNGC customers.
2. Make the program "risk-responsive" and capable of adjusting to changing natural gas market conditions in compliance with the Washington Utility and Transportation Commission's Policy Statement UG-132019.
3. Reduce hedge losses and more proactively respond to low risk or a falling market.
4. Further diversify portfolio by integrating financial hedging instruments.
5. Coordinate design features with appropriate CNGC personnel.

The 2024 Hedge Plan is structured such that all hedge decisions and rationale for those decisions are recorded and are easily retrievable. Hedges percentages are not "set", and decisions are not "forgotten". Decisions are supported by timely data and analysis (see Section VI). Management is made aware of the downside and upside risk of hedging, as well as the risk associated with not hedging. While the underlying analysis may be complex, the output is intentionally made simple. This facilitates the flow of information and increases transparency throughout the organization.

The Hedge Program utilizes a three-year forward-looking ladder with minimum and maximum purchase levels (see Figure 3). The hedge ranges offer flexibility to respond to market conditions and risks should they shift throughout the hedge season.



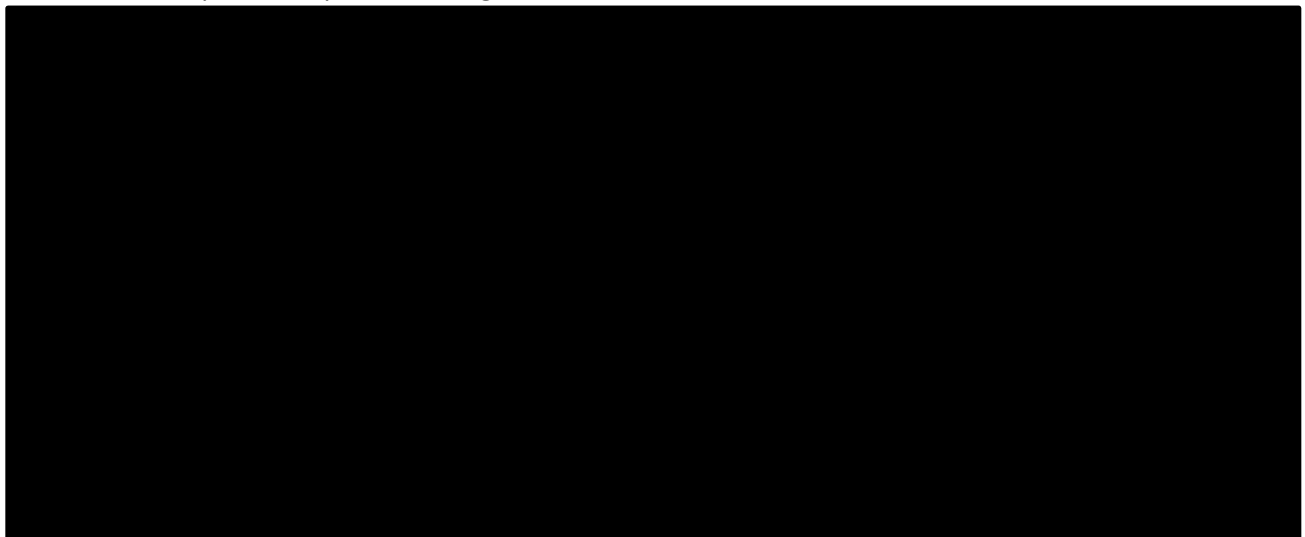
The start of a hedge year is November 1 and the end of the hedge year is October 31 of the next calendar year. However, the hedge ladder rolls over on April 1 to begin buying for the coming years. On this date the

Year 2 becomes Year 1, Year 3 becomes Year 2, and a new Year 3 is added. The rolled off Year 1, now “Year 0”, will have several months (April through October) that have not settled and can still be hedged during this time. In terms of hedging the prompt (next) month, any fixed price purchases (hedges) will need to be performed prior to the month’s bid-week in order to be classified as a hedge. A hedge schedule is provided in the Appendix for more clarity.

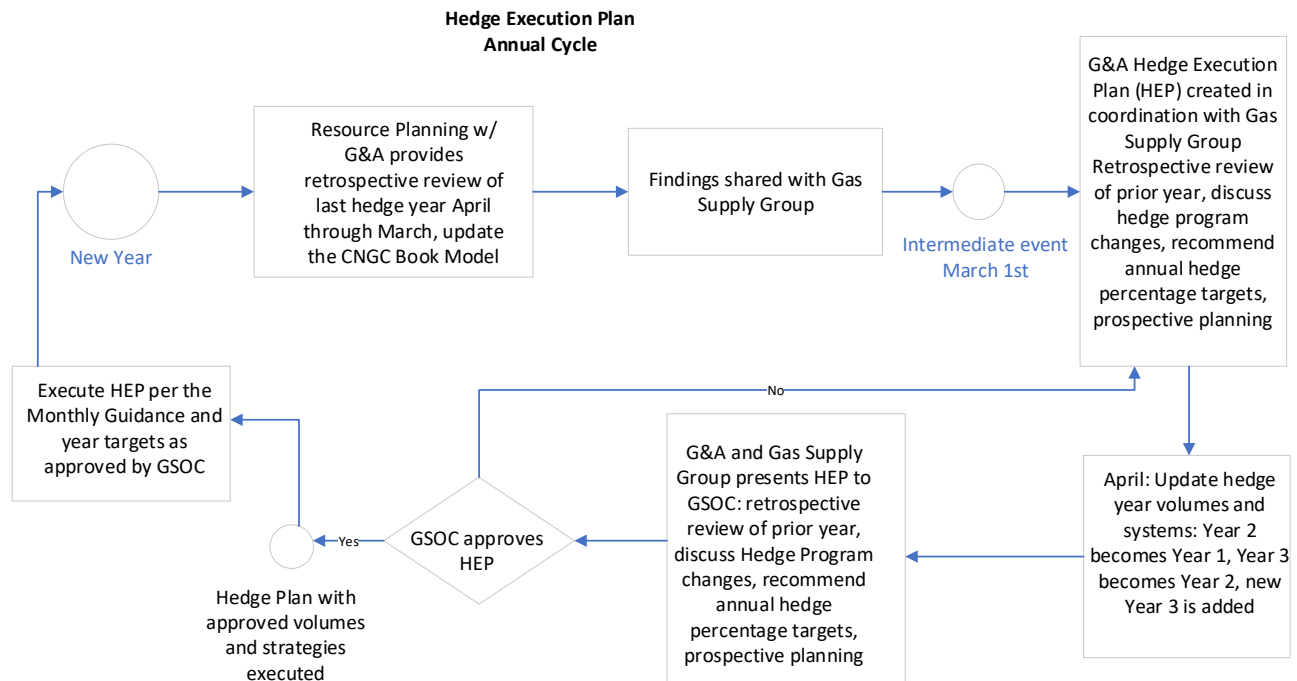
As part of the Hedging Program, a prospective HEP is created approximately April each year by CNGC’s Resource Planning group, in collaboration with Gas Supply operations, to lay out a roadmap for the coming year’s hedge season. In preparation for the HEP creation, hedges from the previous year are marked and analyzed, the VaR and Book Model are recalibrated to take into account the latest market inputs, and Years 1, 2, and 3 rollover to the new buying years. When this is complete, a meeting with the GSOC is convened to seek approval to move forward with the HEP and covers the following items:

1. A review of the prior year’s hedging activities and results.
2. The CNGC Book Model as provided by Resource Planning that shows hedge positions, unhedged positions, and how these positions compare to the current market. The book model looks at the prices in CNGC’s fixed contracts and compares it to the forward prices for the months that a contract is active. The result is displayed as a Mark to Market Calculation, a snapshot of which can be found in Figure 4. The full Book Model is included with this Plan as an appendix.
3. Designation of who will be primary and who will be secondary in the performance of hedge execution and who is responsible for deal capture and confirmation.
4. A preliminary hedging outlook for the upcoming year.
  - a. Major market drivers affecting national and regional gas.
  - b. Potential market opportunities and risks for the coming buying season.
  - c. The volume distribution of purchases through the hedge year to get to the end of season hedge goal.
  - d. Recommended instruments to be used for hedging (fixed-price physicals, swaps, options etc.).
5. An end of year hedge percentage goal for Year 1, Year 2, and Year 3.

The annual HEP process is pictured in Figure 5.



**Figure 5 - HEP Annual Cycle Decision Tree**

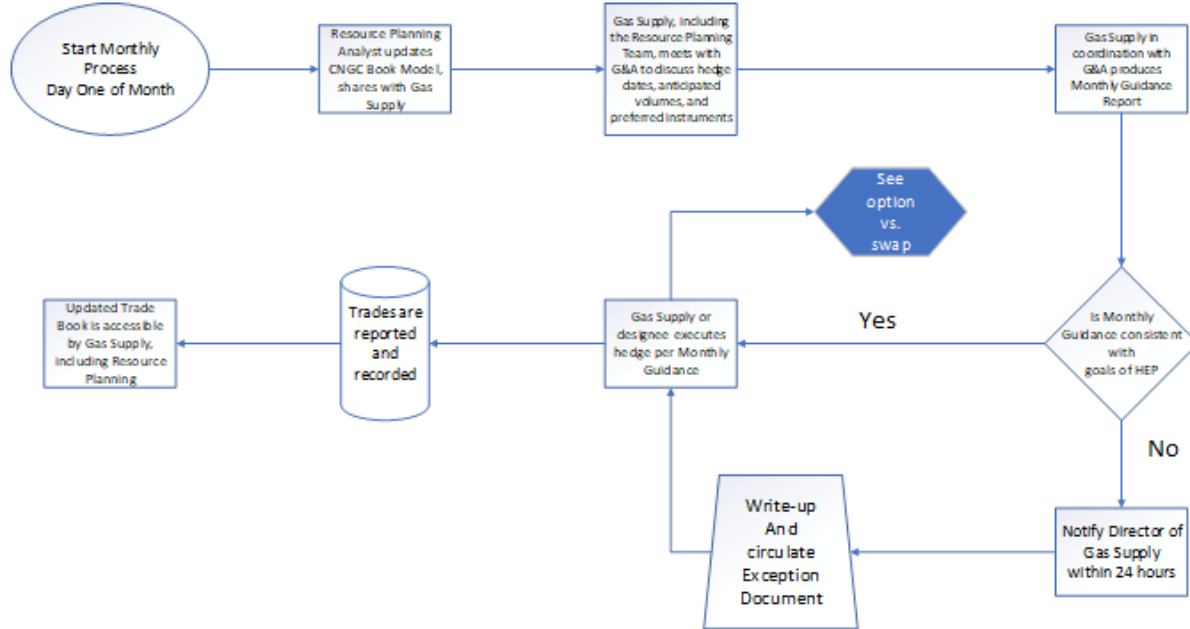


### Monthly Guidance and Trade and Execution:

In order to implement the 2024 HEP as approved by GSOC, a Monthly Guidance document is created after updating the CNGC Book Model to include the most recent transactions and analyzing the various risk metrics. The purpose of the Monthly Guidance is to promote dialogue between CNGC's Resource Planning team, who will be responsible for tracking and updating the CNGC book and various associated risk metrics, and the Gas Supply operations team, who will be negotiating and executing hedge transactions. In addition, Monthly Guidance provides documentation and transparency for future internal or external review.

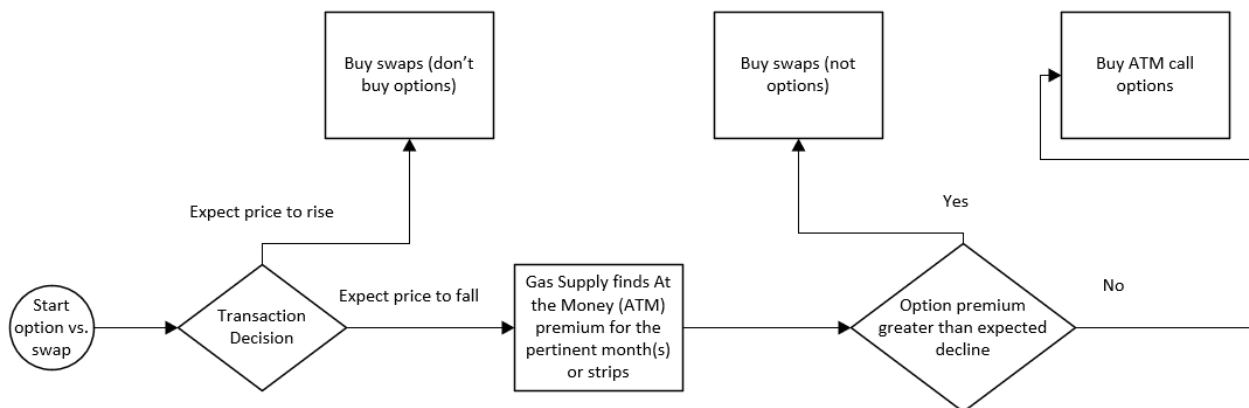
Prior to the start of each month, the Resource Planning group within the Gas Supply department, with assistance from G&A, provides the Manager, Gas Supply with a Monthly Guidance. The Monthly Guidance gives recommendations on hedge timing, volume, and instrument type. A detailed visualization of the Monthly Guidance is shown as a decision tree in Figure 6, while a copy of a sample Monthly Guidance is included in the appendices of this Plan. Regarding instrument type, Figure 7 outlines the decision tree followed in deciding between swaps and call options. In deciding between financial and physical products, cost will be a major consideration. Typically, recommendations are written to give the gas buyer some flexibility to make cost effective decisions. For example, buy dates may be given but the exact time of day for purchasing are not provided. All guidance reports are delivered electronically and made available for review by the Gas Supply team, upper management, and regulatory bodies. Guidance reports are supported by the data-driven analysis by Gas Supply operations, Resource Planning, and G&A.

**Figure 6 – Monthly Guidance Decision Tree**



**Figure 7 - Call Options vs Swaps Decision Tree**

Call Options Purchase vs. Swaps Purchase  
 Hedge Decision Flow



Hedging purchases are expected to occur at a minimum of once a quarter but will more typically occur once a month. Generally, once a quarter, hedge purchases are reserved for locations that are less liquid, or in low volume summer months where splitting the hedge requirement into monthly increments is not cost effective. Otherwise, hedges will occur monthly per market guidance and a data-driven analytical framework as discussed earlier. However, as part of risk-responsive framework, Monthly Guidance may also

recommend delaying or accelerating purchases from one month to another if the market is perceived as over or underpriced as indicated by quantitative metrics.

#### IV. Material Changes to Hedge Program

The primary purpose of the CNGC Hedge Program is to provide the structural objectives of the Company's hedging activities. This includes the overall goals of the Hedge Plan, the minimum and maximum allowed hedge percentages, and the hedge target ranges. In the 2024 Hedge Plan, we document two significant changes to the Hedge Program: [REDACTED]

The justification for this change comes from the previous year's hedge results and current market conditions. The NYMEX natural gas market currently exhibits a steep contango, resulting in significantly higher prices for purchases further into the future compared to G&A's forward expectations. As contracts roll off, these prices are anticipated to decrease. Furthermore, current natural gas storage fundamentals and regional basis conditions support this decision. NOAA has issued a La Niña watch for the latter half of 2024 and early 2025 which could potentially bring colder winter weather to the Pacific Northwest.<sup>3</sup> Should the La Niña arrive according to expectations, this would lead to increased weather-driven demand. This increased demand could have a bullish influence on price action throughout the season. Cascade and G&A will be statistically monitoring this dynamic and may make adjustments accordingly as the weather patterns and their effects become more defined. Additionally, the 2024 HEP proposes adding a small layer of financial instruments. G&A recommends the exploration of financial derivatives in tandem with the current hedging portfolio approach. For the current season, G&A recommends exploring the benefits of adding a small 5-10% layer of costless collar or call option strategies to encourage market liquidity from dealers while providing added market protection.

#### V. Renewable Natural Gas

This section is concerned with the treatment of Renewable Natural Gas (RNG) in the Hedge Plan. RNG should be thought of as the combination of two elements: The environmental attribute of the gas (Renewable Thermal Certificate or RTC) and the biomethane. Similar to conventional natural gas, the price of the biomethane can be tied to an index, a fixed price, or a combination of the two. Fixed price RNG purchases are a hedge against rising prices, but the value of this gas cannot be evaluated with the analytics discussed in this plan, as most of the value is in the environmental attributes associated with the gas versus the gas itself. That being said, by evaluating deals where Cascade is purchasing solely the environmental attributes (RTC only deals) as well as projects where the Company acquires both the RTC and biomethane, the Company is able to isolate and value the individual elements of these deals. Using Cascade's RNG Cost-Effectiveness Evaluation Model:

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<sup>3</sup> [Climate Prediction Center: ENSO Diagnostic Discussion \(noaa.gov\)](https://www.noaa.gov/enso/diagnostics)

$$C_{RNG} = I_{RNG} - AC_U - AC_D + \sum_{T=1}^{365} (P_{RNG} + VC - P_{Conventional} * Q$$

Where:

$C_{RNG}$  = The all-inclusive annual cost of a proposed RNG project

$I_{RNG}$  = The annual required investment to procure a proposed RNG resource. If Cascade is simply buying the gas and/or environmental attributes, this value is zero.

$AC_U$  = Avoided upstream costs

$AC_D$  = Avoided distribution system costs

$P_{RNG}$  = Daily price of renewable natural gas being evaluated

$Q$  = Daily quantity of gas being evaluated

$VC$  = Variable cost to move one dekatherm of gas to Cascade's distribution system. This value can be zero if a project connects directly to the Company's system.

$P_{Conventional}$  = The price of conventional natural gas, can be bundled into the price of RNG or separate.

The Company is able to identify the  $P_{Conventional}$  element of the RNG deal and use that to create the hedge value of the brown gas portion of the deal. Cascade does not currently have any deals structured in this manner, but anticipates that this may be an element in a future Hedge Execution Plan.

Beyond the valuation of the biomethane portion of RNG, the volumes of biomethane procured must also be accounted for in the context of the Hedge Execution Plan. Any RNG deal that qualifies as a hedge as detailed in this section will count against the hedge procurement targets for that hedge. If the Company acquires 5% of its total gas supply as fixed price RNG, for example, and then fully executes hedges to meet a hypothetical 50% hedge target for that year, only 45% of its portfolio will be left exposed to the market, leaving Cascade with a potentially undesirable Value at Risk with regards to falling gas prices.

## VI. 2024 HEP Meeting and Final Recommendations

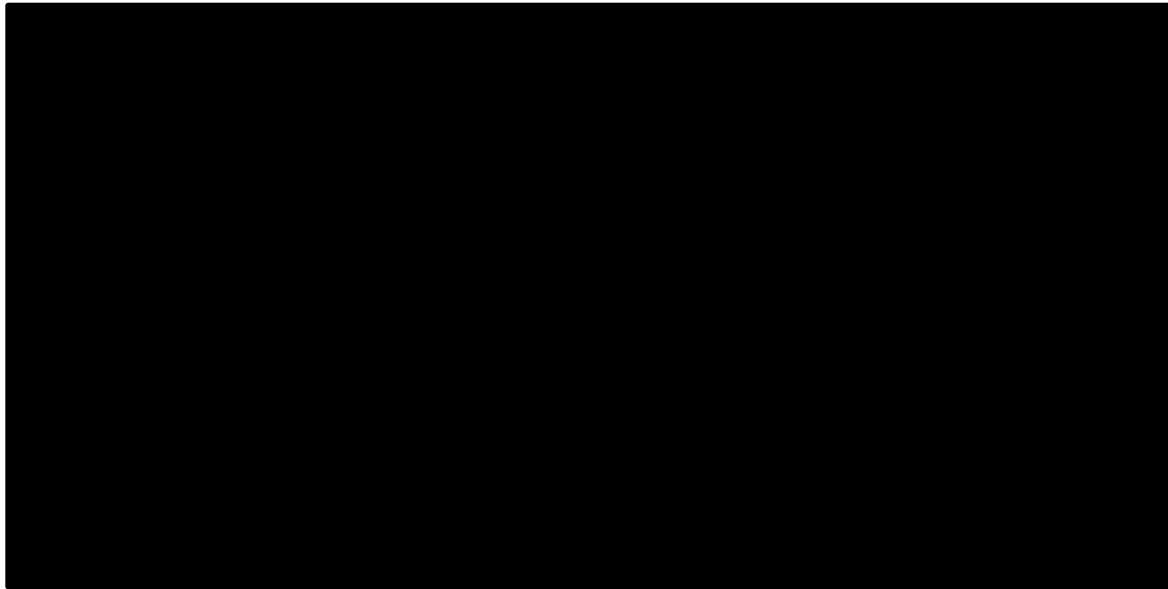
On April 29<sup>th</sup> 2024, Cascade presented its Gas Supply Oversight Committee (GSOC) with the recommendations detailed in this Plan. The requested action was for GSOC to approve the Plan, specifically as follows:

[REDACTED]



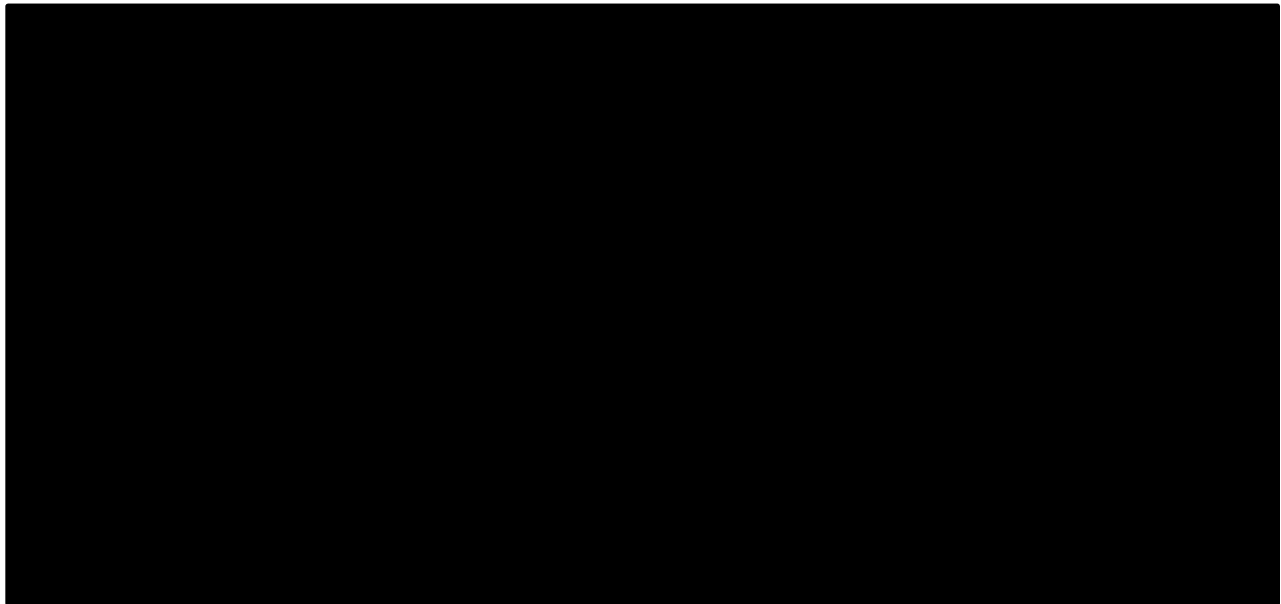
GSOC members voted, and on April 29<sup>th</sup> 2024 the authorization was confirmed via a unanimous 6-0 vote.

Figure 8 shows the final end-of-season hedge target volumes (as a percentage of forecasted usage):



For clarification, the hedge minimum, maximum, and targets are calculated as percentages of forecasted annual usage provided by the Resource Planning team. Hedge percentages are treated as a portion of the larger percentage of base supply [REDACTED]

[REDACTED]



GSOC will be informed (via email and return receipt) prior to notable deviations from recommendations in the preceding HEP. Notable deviations include changing end of year hedge percentage targets by greater than 5%.

All volume added above the minimum hedging percentage is recognized as a. However, hedging below the maximum volume percentages is a recognition of the lack of an overriding bullish signal that would cause price spikes in the coming year. Thus, splitting the minimum and maximum hedge percentages mitigates upward price risk while minimizing risk of hedge losses. This approach also acknowledges the high level of uncertainty currently in the market and will offer additional flexibility should market conditions shift quickly.

## VII. Data Driven Hedging

### Programmatic Hedges:

The programmatic portion of CNGC's Hedge Program consists of two main components. The minimum hedge percentage requires that CNGC cover at least a portion of its expected purchases in Years 3 to 1 [REDACTED]. Additionally, the accumulation of hedges on a calendar schedule, in accordance with each Monthly Guidance, is also considered programmatic.<sup>4</sup>

### Discretionary Hedges:

Non-programmatic (discretionary) hedges are data-driven decisions that CNGC makes above the minimum purchase boundary each hedge year. Data-driven, discretionary hedges now fall under two categories within the CNGC program: market-based and risk-based recommendations.

Naturally, if prices are expected to increase in the medium-term, analysis and forecasting will recommend a higher hedge percentage in a certain month, and vice versa if prices are expected to fall. Key market metrics for forecasting such fluctuations include, but are not limited to, US storage levels, weather forecasts, production outlooks, LNG exports, fuel switching for power generators, and a host of other fundamental factors. G&A plays an active role in providing and shaping market intelligence when hedge decisions are made in this way. On the risk side, a Value-at-Risk (VaR) model developed by G&A and operated and expanded by CNGC contributes to hedge decisions that are forecasted to reduce the overall exposure of CNGC's portfolio to both upward and downward price fluctuations.

### VaR and Risk Calculations:

To effectively manage and respond to price risk, CNGC must understand and measure the risks in its hedge book. The first step is the creation of the CNGC Book Model. The CNGC Book Model contains CNGC's hedges, which includes fixed-price physical purchases and financial instruments (swaps and call options). The Book Model calculates the volume of gas that is hedged and the volume of gas that is unhedged using forecast data from the most recent IRP load demand models. The hedged and unhedged portfolio is calculated for the next three hedge years for each of CNGC's three supply basins. These figures, along with a hedge schedule, create volume recommendations for the HEP and the Monthly Guidance. Comparing the portfolio to the current market allows for mark-to-market calculation of the hedges already completed.

Over the past several seasons, CNGC has worked diligently to develop and expand its ability to quantify various risk metrics. The premier result of these efforts has been the integration of robust VaR calculations into each month's recommendations. The underlying principles of CNGC's VaR modeling are straightforward. The volume of gas that will need to be purchased and is not hedged presents an upward price risk for CNGC's customers, as they will need to pay more if natural gas prices rise. Conversely, the hedged portion of CNGC's portfolio presents a downward loss risk to CNGC hedge book if prices decline. G&A and CNGC have developed two different but interrelated methods for calculating VaR. The "VaR to Life" segment of the models looks at each futures contract in CNGC's portfolio and calculates the potential risk through the life of the contract, and the "VaR Monthly" model looks at a shorter-time period, calculating

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<sup>4</sup> This is consistent with the definition of a programmatic hedge from Gettings White Paper page 19 as referenced on page 10 of Docket UG-132019.

the potential exposure of CNGC's entire portfolio over a one-month time frame. Both VaR calculations are made using a proprietary Monte Carlo method with formulas and factors derived from historical pricing behaviors. CNGC and G&A, the primary developer of the VaR model, has given specific consideration to the independent trading behavior of CNGC's procurement basins.

The CNGC Book model and the VaR modeling are updated prior to HEP and Monthly Guidance discussions. This allows for dynamic analysis of current market information. In summary, the VaR results provide GSOC and Gas Supply with potential losses, of a set probability, for both the hedged and unhedged portfolio. The Monthly Guidance also indicates favorable months to hedge based on which months provide the greatest net risk reduction. These calculations influence decisions. A goal of the VaR calculation is to balance VaR-down of CNGC's hedged portfolio with the VaR-up of floating volumes and to ensure that the Company is aware of the potential exposure of CNGC's portfolio to extreme price events in either direction. A proper balance provides a safeguard against a hedge position which would be opposed to the natural market position of CNGCs customers. In other words, lower price should be a benefit for gas consumers.

## VIII. Procurement Strategies

CNGC's GSOC oversees the Company's gas supply purchasing and hedging strategy. The Company's current gas procurement strategy is to have physical gas supplies under contract for 90% of year one's estimated core needs. Under this procurement strategy, roughly 10% of the winter load would come from storage utilization while the remaining amount of the portfolio will be met with spot purchases. Spot purchases consist of either First of the Month deals, executed during bid week for the upcoming month, or day purchases which are utilized to meet incremental daily needs.

CNGC's goal is to have a gas procurement strategy which achieves diversity and flexibility in its gas supply portfolio through a combination of index based physical, fixed price physical structures and financial derivatives such as swaps and options. This goal encompasses not only supply basin origination and capacity limitations, but also includes a combination of pricing options that will assist CNGC in minimizing exposure to price volatility. The buying approach to locking in a significant portion of gas prices maintains a balanced supply portfolio that continues to represent stable pricing as well as secure physical supplies for the Company's core customers.

CNGC employs a number of processes when procuring fixed-price physical and indexed-priced spot physical. There is a separate process for financial derivatives as discussed throughout this Hedge Plan.

### Physical Supply

CNGC utilizes TruMarx's COMET transaction bulletin board system to assist in communicating, tracking, and awarding most activities involving the Company's physical supply portfolio. In the procurement process for physical natural gas the Company posts an RFP to its 25+ physical supply parties to solicit offers on needed supply. The Company then collect bids from these parties over a period, depending on the number or time requirements of the packages sought, comparing the indicative pricing to each party as well as comparing the information to market intelligence available at the time. Ideally, after monitoring these indicatives and

the market, CNGC awards the posted packages. Note that posting on COMET does not obligate CNGC to execute any proposal made by physical suppliers.

Naturally, price is the principal factor; however, CNGC also considers reliability, financial health, past performance, and the party's share of the overall portfolio as to ensure party diversity. It should be noted that there is always the possibility the lowest market price may be during a period when the Company is initially gathering the price indicatives; in that situation there is a risk that a sudden price run-up may lead to filling the transaction at the higher end of the bids over time or delay the acquisition to another time. However, the reverse is also true—the initial price indicatives may start high and drop over time, allowing CNGC to capture the transaction on the downward swing. In the end, timing is always a factor as the market cannot be perfectly predicted.

Occasionally, an operational situation may occur where time is of essence, such as a need to acquire spot gas to meet sudden swings in load demand or in response to an upstream pipeline operational event. In such situations, CNGC may make a short procurement purchase within a narrow time window to procure and schedule the supply. The Company contacts one to three reliable physical parties to meet these short-term supply needs. Again, price is the principal factor but not the only driver for the awarding of these short term supply needs. Also, the Company always encourages physical suppliers to propose other transactions or packages that they feel may be of interest in helping CNGC secure cost effective and operationally flexible transactions to meet CNGC's needs. In addition to analysis using Excel, CNGC also uses the Plexos® resource optimization model, which is a useful tool for examining logical, operationally, and financially feasible physical packages that best utilizes CNGC's various transportation, storage and operational capabilities.

### **Financial Derivatives**

For financial derivatives, CNGC contacts Company-approved financial counterparties ("counterparties") to request bids consistent with the GSOC approved HEP. Naturally, this process requires additional analysis regarding financial reasonableness, timing, hedging strategy, and volumes. The Monthly Guidance and CNGC Book Model are the primary tools used to identify and analyze potential financial derivatives possibilities. Price comparisons may also become more complicated since pricing could be tiered; part of a structure deal may be tied to an index or contains floors, caps, etc. Bids are received from the counterparties and, similar to the physical portfolio, the Company then collect bids from these parties over a period, depending on the number or time requirements of the packages sought, comparing the indicative pricing to each party as well as applying the information from market intelligence available at the time. Furthermore, G&A uses Marketview, and CNGC has access to ICE to assist with price discovery. Both deliver real-time market pricing information for hedging transactions. Ideally, after monitoring these indicatives and the market, CNGC will award the specific packages to individual parties. Again, CNGC is not obligated to execute any offer received.

## IX. Retrospective Report of 2023

As per WUTC guidelines, all LDC Hedge Plans must include a retrospective review of the last year's hedging results. During CNGC's last HEP cycle, GSOC authorized Cascade to hedge [REDACTED]

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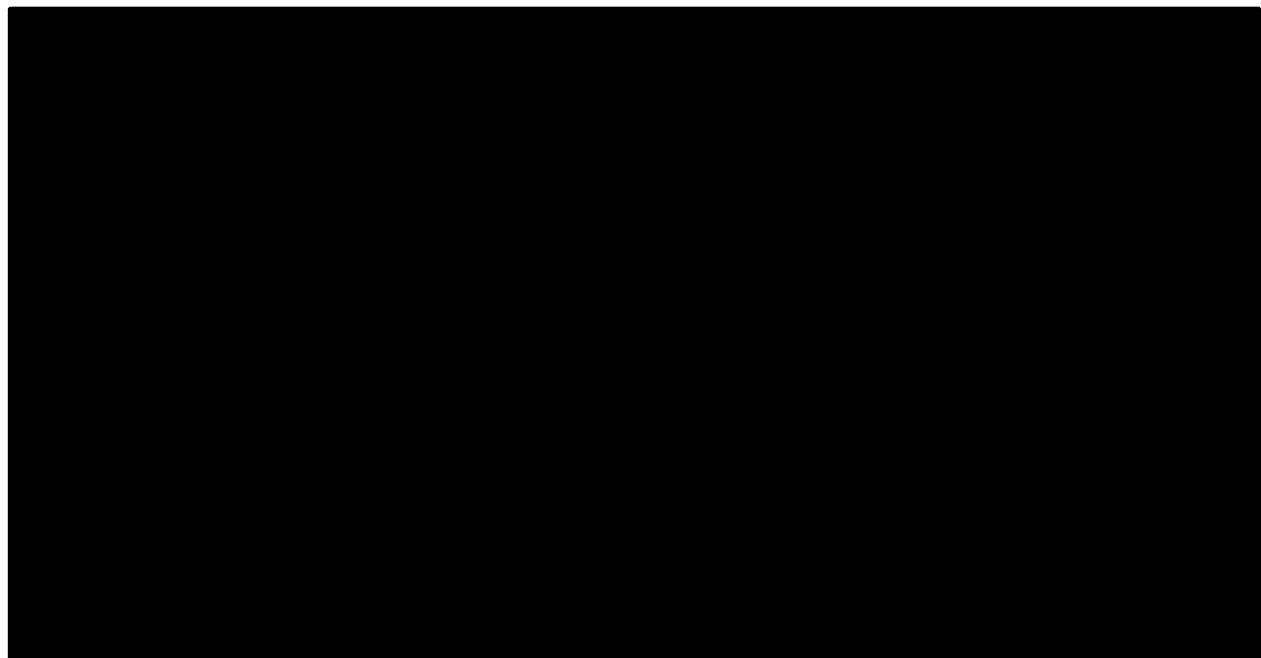
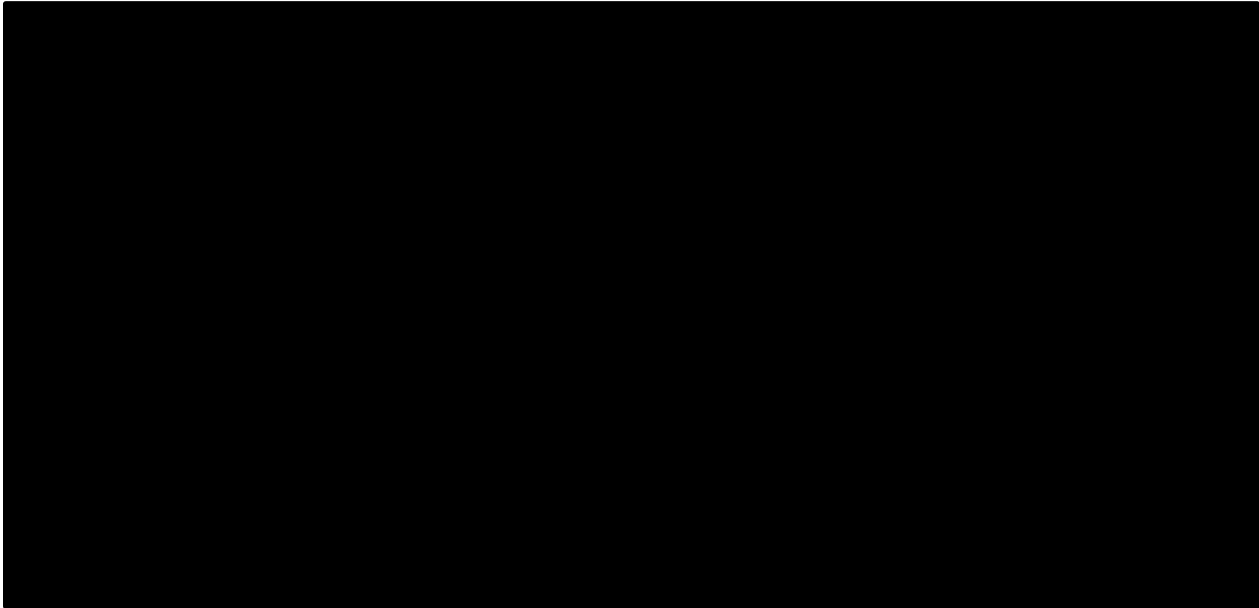


Figure 11 provides tabular results of the volume and weighted-average cost of hedges and their gain or loss compared to market prices. Detailed results of the retrospective performance of each hedge can be found in the retrospective analysis appendix.

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<sup>5</sup> Cost estimates based on hedge costs compared to monthly index prices at each supply basin. See table in the appendix (page 10) for a monthly breakdown.



## X. Market Summary

The following sections contain forward-looking statements based on the current market opinions of its authors. However, these views are subject to change and are used for informational purposes only. Gelber & Associates has identified several primary drivers of the natural gas market in its annual Natural Gas Price Forecast. For 2024, there are four key identified pricing factors at play:

- Production has climbed back from lows seen in 2Q 2024, supported by a sizeable rally in June
- Far above-average storage levels going into the 2024 fall season
- Demand increases from pending LNG export demand growth from Plaquemines LNG and Golden Pass LNG beginning in 2025. There is also increased reliance on natural gas power generation this summer and winter with the current La Niña weather pattern
- LNG Canada and Woodfibre LNG will begin to weigh on Canadian supply and further link Canada to international pricing dynamics

US dry natural gas production has seen a choppy year, reaching towards 106 Bcf/D in February before falling back below 100 to start the summer, then climbing up to current levels of 103 Bcf/d since May 2024. Despite low gas prices which initially led to these production cuts, there appears to be support for production near 103 Bcf/D due to a number of factors. Existing and anticipated demand for liquefied natural gas (LNG) remains robust, offering a promising outlet for excess supply in the final months of 2024. Moreover, favorable prices for oil and natural gas liquids provide additional incentives for producers to maintain current production levels. This combination of factors has fostered an environment that supports production around 103-105 Bcf/d, despite low natural gas prices and a storage surplus.

Currently working gas in US gas storage sits at 3,264 Bcf, 375 Bcf above the 5-year average, and 209 Bcf above levels observed last August. Natural gas storage levels have spent the majority of 2024 outside of the 5-year range of inventories. This occurred following extremely low withdrawals for the 23-24 winter season, allowing for a robust end-of-season carry-out inventory level of 2,259 Bcf. As summer demand has materialized, injections have slowed significantly, pulling inventories back within the 5-year range. While this has provided some relief from the current surplus, production levels are strong, and storage levels will

remain elevated above the 5-year average. As a result, G&A is projecting a near-full 3.8 Tcf carry-out inventory level at the end of the injection season.

US LNG Exports have also seen a relatively choppy progression in 2024. Multiple maintenance events involving Freeport, Corpus Christi LNG, and others have taken some export capacity offline at various times throughout the year. The biggest of these events occurred in mid-April and in mid-July, dropping export volumes over 1.5 bcf/d for multiple weeks each time. In addition, delays have pushed Golden Pass LNG to start closer to late 2025 or early 2026. The next expected US LNG capacity expansion will come via Plaquemines LNG, which has already started to ramp up feedgas volumes in its start-up phases. Plaquemines is expected to ramp up feedgas demand to around 0.5 Bcf/d by the end of 2024, slightly tightening Louisiana markets.

US residential/commercial natural gas demand remained subdued this year primarily due to the influence of an El Niño weather pattern in the winter of 23/24, shifting into a La Niña pattern in the summer. However, a brief weakening of the El Niño allowed for a snap of cold air to blanket the US in late January, driving residential/commercial demand to a seasonal high point of 71.7 Bcf/D. This unexpected surge in demand was a stark departure from the subdued levels experienced prior. However, as the weather moderated, residential/commercial demand swiftly retreated, tracking the lower end of the range, where it currently sits.

High cooling degree days for the summer of 2024 have elevated natural gas consumption in the power generation thermal stack, with US powerburn demand pushing up to 54.5 Bcf/D at the beginning of August. This marks a new record for natural gas demand for power generation, surpassing 2023's record-breaking summer by over 1 Bcf/d at the respective peaks. With Mountain Valley Pipeline (MVP) officially in service as of June 14, 2024, it is expected to significantly impact dynamics in the southeast by enhancing natural gas supply from Appalachia. MVP should ease price pressures during peak demand periods, and offer a more stable and possibly cheaper gas supply, particularly relevant for power generation and industrial use in the Southern and Duke service territories.

Meanwhile, we continue to keep an eye on the Woodfibre LNG facility near Squamish, BC, which is expected to come online around the start of 2027. The planned start date of this facility falls within the three-year planning horizon of Cascade's Hedge Program. Woodfibre LNG facility is expected to produce 0.28 Bcf/day at full capacity. This facility will increase demand, potentially putting added pressure on available gas supplies and pricing in BC. According to the Northwest Gas Association's 2024 Outlook, "...The region's existing storage assets would not be able to make up the 90-day capacity deficiency if the region experiences a cold winter. And the Sumas market hub, already constrained, would become much more so, leading to negative impacts on existing demand..." and corresponding impact on gas prices[1]. The success of Enbridge's Sunrise Expansion Project is critical to addressing these concerns. Cascade will need to be vigilant to safeguard our portfolio exposure if the expansion fails to materialize as currently anticipated.

LNG Canada is also in the purview of Cascade's planning horizon. This facility is slated to be completed in 2025 with an initial capacity of ~2.1 Bcf/D reaching all the way up to ~5 Bcf/D at full operational capacity. This could pull a significant amount of gas produced in western Canada to the facility for export and could be a source of competition for Cascade's already illiquid basis markets. G&A and Cascade will be monitoring the effect and timeline of LNG Canada to protect Cascade's portfolio from upside exposure.



## **XI. Conclusion**

The 2024 Hedge Plan was designed by the Cascade Hedging Project team under the advisory of Gelber & Associates. The Hedging Program implements processes and analytics that comply with the Washington Utility and Transportation Commission UG-132019 policy statement while simultaneously complying with Oregon Public Utility Commission PGA UM-1286 integrated hedging guidelines. The Hedging Program design establishes a framework that provides flexibility to respond to price risk and market changes. Additionally, the Hedging Program establishes analytical and quantitative metrics through use of the Var to Life and Monthly VaR models. These tools are frequently updated to maintain a risk-responsive view of current market conditions.

The CNGC Hedging Program uses a three-year forward-looking ladder while establishing maximum and minimum percentage boundaries that allow hedge volumes to adjust to market conditions. In addition, the 2024 Hedge Plan recommends the continued inclusion of financial transactions such as swaps and call options to improve diversity of hedges and reduce the cost of hedging. The Hedging Program requires a HEP each spring which determines a strategy for the coming buying season after reviewing the prior year's performance. Accordingly, on April 29<sup>th</sup>, 2024, GSOC reviewed the proposed HEP and approved the aforementioned changes. To manage hedge purchasing for the 2024 HEP, CNGC will continue referencing the Monthly Guidance document produced by G&A in collaboration with the Resource Planning group. This monthly process includes an update of CNGC's Book Model and the associated mark-to-market and VaR calculations. The report then facilitates information circulation within the Company regarding these metrics and resulting recommendations for the coming month. Furthermore, Guidance documents provide an additional level of transparency for decision-making, as can be seen in the included appendix.

Cascade will look to continually improve its hedge program in a risk-responsive manner, thereby fulfilling the objectives of UG-132019 and providing essential price protection to customers.