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August 12, 2022

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#### Via Electronic Filing

Rosemary Chiavetta, Secretary Pa. Public Utility Commission 400 North Street Harrisburg, PA 17120

RE: Report of Philadelphia Gas Works on Weather Normalization Adjustment Docket No. P-2022-3033477\_

Dear Secretary Chiavetta:

Enclosed for electronic filing please find the Report of Philadelphia Gas Works ("PGW") on the Weather Normalization Adjustment. This Report is submitted in compliance with the Commission's directive on page 2 and Ordering Paragraph No. 3 of the Order entered on July 14, 2022 in the above referenced matter.

Copies are being served in accordance with the Certificate of Service.

Sincerely,

Is Karen O. Moury

Karen O. Moury

Enclosure

cc: Certificate of Service (with Enclosures)

#### **CERTIFICATE OF SERVICE**

I hereby certify that this day I served a copy of the foregoing Report upon the persons

listed below in the manner indicated in accordance with the requirements of 52 Pa. Code

Section 1.54.

#### Via Email only

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Dated: August 12, 2022

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# Philadelphia Gas Works



## Weather Normalization Adjustment Report to the Pennsylvania Public Utility Commission

Docket No. P-2022-3033477

August 12, 2022

## Philadelphia Gas Works

## Weather Normalization Adjustment Report to the Pennsylvania Public Utility Commission

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#### I. Introduction

PGW's Tariffed Weather Normalization Adjustment ("WNA") is a charge or credit applied to a customer's bill that adjusts for warmer or colder than normal weather during a billing cycle.<sup>1</sup> As a general summary, if the weather is warmer than normal, the WNA is a charge on the bill. When the weather is colder than normal, the WNA is a credit on the bill. There is no WNA charge or credit on a customer's bill if the weather is within 1.0% warmer or colder than normal. The WNA is applied to customer usage from October 1 through May 31. It has been instrumental in helping PGW to become a financially stable and strong company, with weather related charges to customers that were designed to be fair and reasonable.

An anomaly occurred with the WNA related to mid to late May 2022 weather, which produced unusually large charges to some customers. PGW determined that PGW's customers should not bear these unprecedented and unusually large charges, and therefore, PGW filed a Petition for Emergency Order on June 30, 2022, at Docket No. P-2022-3033477 ("PGW Petition for Emergency Order") seeking Commission approval to immediately revise its Tariff to reverse the WNA charges that were applied to May 2022 usage billings.

The Commission issued an Emergency Order on July 1, 2022, authorizing PGW to implement the proposed Tariff revision and also directed that PGW submit a report of its findings to date regarding the WNA within 30 days. This Order was ratified on July 14, 2022 ("Ratification Order").

On August 2, 2022, in response to the issues discussed above, PGW filed a Tariff Supplement and Petition for Approval on Less Than Statutory Notice ("PGW WNA Control Request Petition"). PGW proposed addition to its WNA to cap the WNA at 25 percent of the total of the Customer Charge, the Distribution Charge (including the Distribution System Improvement Charge), and if applicable, the Gas Adjustment Charge (including the Interruptible Revenue Credit) (collectively herein, "Bill Charge").

Consistent with the Ratification Order, this report provides PGW's WNA investigation results. The Ratification Order required that PGW report on its investigation of "the WNA formula, the inputs, and current information about weather trends affecting May."<sup>2</sup>

<sup>&</sup>lt;sup>1</sup> See Philadelphia Gas Works' Gas Service Tariff – Pa P.U.C. No. 2, Page Nos. 149-150.

<sup>&</sup>lt;sup>2</sup> Ratification Order at 2, entered July 14, 2022, in Docket No. P-2022-3033477.

#### II. Purpose of the WNA

Utility base rates are established on a "weather normalized" basis, such that rates are set to allow the utility to generate revenues at levels determined to be reasonable assuming that sales volumes are at the levels the utility would experience if the weather were at "normal" levels.

When a year is colder or warmer than some determined "normal" level, the utility typically bills more or less than the weather normalized amount, all other things being equal. One way in which to balance out the effects of "unusual" weather (and permit the utility to realize revenue levels that are consistent with that which the Commission determined was "reasonable" in its last rate case) is by utilizing a WNA mechanism. For a cash flow regulated utility such as PGW, a WNA assists the company in protecting its authorized level of liquidity and reducing the potential for emergency rate relief in an extremely warmer than normal scenario. Under PGW's cash flow method of ratemaking, ratepayers provide revenues to cover the entire costs of service – but only the cost of service. Any revenue shortfalls or windfalls ultimately inure to the ratepayers. A WNA can minimize the degree to which such weather-related shortfalls or windfalls occur.

For PGW, a WNA provides several benefits that are not limited to those below:

- Stabilizes cash flow from year-to-year
- Reduces the need for short-term borrowing from year-to-year
- Positively affects PGW's-credit rating, reducing cost of borrowing
- Reduces the need for base rate proceedings to recover revenue shortfalls related to weather

As a result, the WNA reduces the incremental need for short-term financing and rate case proceedings specific to revenue shortfalls due to unusual weather and contributes to PGW's currently positive bond credit rating.<sup>3</sup>

## III. Investigative Process

This report provides PGW's investigation results as required by the Order. Data was used going back to Fiscal Year 2019.

<sup>&</sup>lt;sup>3</sup> The rating agencies have viewed PGW's WNA favorably, describing it as a key to the utility's financial stability. See Moody's Investor Service Credit Opinion (June 10, 2019) at 4; S&P Global, Philadelphia; Gas; Joint Criteria (May 8, 2019) at 3-4; Fitch Rating Outlook (July 5, 2018) at 1. These rating agency reports are part of the record in PGW's last rate case (R-2020-3017206, Exh. JFG-3).

Below, the WNA formula and its inputs are reviewed, and this report examines the inputs that affected the May WNA charges. Additionally, weather trends are analyzed against historical data.

## IV. WNA Formula

#### <u>Formula</u>

As defined in the Tariff, PGW's WNA formula is as follows:

WNA = DC \* [(HL \* <u>NHDD +/- (NHDD \* 1%)</u>) - HL]AHDD

whereas HL = TU - (BL \* BC)

## Normal Weather (NHDD)

For PGW's WNA, normal weather is derived from a 20-year average of Normal Heating Degree Days ("NHDD"), pursuant to PUC Order dated November 8, 2017.<sup>4</sup> Actual Heating Degree Days are recorded daily from the National Oceanic and Atmospheric Administration (NOAA). Heating Degree Days are calculated by subtracting the daily average daily temperature from 65 degrees. If the average temperature is greater than 65 degrees, then there are 0 heating degree days.

For example, if the High Temperature of the day is 60 degrees and the Low Temperature is 40 degrees, then there are 15 heating degree days.

60 + 40 / 2 = 50 degrees; 65 minus 50 = 15 heating degree days.

Of note, consistent with the PUC Order in the 2017 base rate case and PGW's Tariff, PGW submits annual Weather Normalization Adjustment Reports at that docket and serves the parties to the rate case. This report shows the AHDD and the Total WNA Charge (Credit), this information is transparent to the Commission and the parties. The most recent report for Fiscal Year 2021 was filed on January 4, 2022.

## WNA Tariff Formula Inputs

4

• TU – total usage ("TU") for the Customer-specific billing cycle, measured in Mcf.

Opinion and Order, ¶ 3, entered November 8, 2017, in Docket No. R-2017-2586783.

- BL base load ("BL") Mcf is the Mcf per Customer used per day for non-heating purposes. BL is determined separately for each individual Customer and is revised annually based on non-heating month usage. BL represents the gas usage per day for non-heating purposes. If an individual Customer's BL is not available, the BL for the related customer class is applied.
- BC billing cycle ("BC") is the actual number of days shown on the bill that the Customer receives for service.
- HL normalized amount of gas used for heating purposes ("HL"). HL is the Customer's TU minus the normal gas usage for non-heating purposes derived by multiplying BL and BC.
- DC delivery charge in \$/Mcf ("DC").
- NHDD normal heating degree days ("NHDD") for any given calendar day within a month are based on the normal weather determination applied in PGW's most recent base rate case, currently twenty years, as approved at Docket No. R-2017-2586783. The NHDD provided for in the formula are the total number of NHDD for the BC. The degree day data is provided by the National Weather Service and measured at the Philadelphia International Airport.
- AHDD actual experienced heating degree days ("AHDD") for the billing cycle. The degree day data is provided by the National Weather Service and measured at the Philadelphia International Airport.
- Dead-band Percentage Set as 1%, this represents the margin whereby the heating degree days vary and there would be no WNA. When the weather is colder than normal, the deadband is added to NHDD. And when the weather is warmer than normal, the dead-band is subtracted from NHDD.

## WNA Calculation Explanation and Examples

- The BL is multiplied by the number of days in the BC to calculate the normal gas usage for non-heating purposes.
- The non-heating gas usage calculated above, BL, is subtracted from TU to derive the normalized amount of gas used for HL.
- NHDD are divided by AHDD to derive how much the weather has varied from the normal weather.
- The normalized amount of gas used for heating purposes, HL, is multiplied by the ratio of NHDD to AHDD to calculate the weather normalized gas usage.
- HL is then subtracted from this to derive the difference between actual and normalized gas usage.

• This amount is then multiplied by the rate case DC to calculate the WNA.

#### **Example Calculation #1**

Units in these examples are in Ccf as opposed to Mcf to align with actual customer bill presentation.

Assume customer has:

i)	Total Usage (TU) of 21 Ccf.	
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- ii) Base Load (BL) of 0.54 Ccf/day
- iii) Billing Cycle (BC) of 30 days
- iv) Bill Period from 5/11/2022 through 6/10/2022
- v) Normal Heating Degree Days (NHDD) of 47
- vi) Actual Heating Degree Days (AHDD) of 1
- vii) Delivery Charge (DC) of \$0.72955/Ccf
- 1. The Customer's non-heating gas usage (HL) is calculated by subtracting the BL of 0.54 Ccf/day times the BC of 30 days, from the TU of 21 Ccf.

HL = TU - (BL \* BC) = 21 Ccf - (0.54 Ccf/day \* 30 days) = 21 Ccf - 16.2 Ccf = 4.8 Ccf

2. The variation in weather is calculated by dividing NHDD of 47 by AHDD of 1 with a margin, or dead band, of 1%. This dead band value gives a margin of +/- 1% where if AHDD and NHDD differ by any less than that, there is no WNA charge/credit.

$$\frac{\text{NHDD} + (\text{NHDD} * 1\%)}{\text{AHDD}} = \frac{47 - (47 * 1\%)}{1} = \frac{47 - 0.47}{1} = \frac{46.53}{1} = 46.53$$

3. HL is then multiplied by this 46.53 to derive the normalize gas usage.

(4.8 \* 46.53) = 223.344 Ccf

4. HL is then subtracted from the normalized gas usage to derive the adjustment for weather normalization.

223.344 – 4.8 Ccf = 218.544 Ccf

5. This difference (218.544) is then multiplied by the DC of \$0.72955/Ccf and prorated for 20 WNA-applicable days of 5/11/2022 through 5/31/2022 to provide WNA charge of approximately \$106.

218.544 Ccf \* \$0.72955/Ccf \* 20 days / 30 days = \$106.29

#### **Example Calculation #2**

If all of the parameters above are held constant with the exception of AHDD changing from 1 to 40 (denominator in the WNA formula), then the WNA would have decreased from a charge of \$106.29 to \$0.33.

- 1. As calculated above, HL = 4.8 Ccf
- 2. The variation in weather is calculated by dividing NHDD of 47 by AHDD of 40 with the dead band, of 1%.

 $\frac{\text{NHDD +/- (NHDD * 1\%)}}{\text{AHDD}} = \frac{47 - (40 * 1\%)}{40} = \frac{47 - 0.47}{40} = \frac{46.53}{40} = 1.16325$ 

3. HL is then multiplied by this 1.16325 to derive the normalize gas usage.

(4.8 \* 1.16325) = 5.5836 Ccf

4. HL is then subtracted from the normalized gas usage to derive the adjustment for weather normalization.

5.5836 Ccf - 4.8 Ccf = 0.7836 Ccf

 This difference (0.7836 Ccf) is then multiplied by the DC of \$0.72955/Ccf and prorated for 20 WNA-applicable days of 5/11/2022 through 5/31/2022 to provide the WNA charge of approximately \$0.38.

0.7836 Ccf \* \$0.72955/Ccf \* 20 days / 30 days = **\$0.38** 

#### Example Calculation #3

Please see the below colder month scenario where a customer received a credit for the WNA.

Assume customer has:

- i) Total Usage (TU) of 240 Ccf.
- ii) Base Load (BL) of 0.34 Ccf/day
- iii) Billing Cycle (BC) of 29 days
- iv) Bill Period from 4/15/2020 through 5/14/2020
- v) Normal Heating Degree Days (NHDD) of 182
- vi) Actual Heating Degree Days (AHDD) of 354
- vii) Delivery Charge (DC) of \$0.66967/Ccf
- 1. The Customer's non-heating gas usage (HL) is calculated by subtracting the BL of 0.34 Ccf/day times the BC of 29 days, from the TU of 240 Ccf.

HL = TU – (BL \* BC) = 240 Ccf – (0.34 Ccf/day \* 29 days) = 240 Ccf – 9.86 Ccf = 230.14 Ccf

2. The variation in weather is calculated by dividing NHDD of 182 by AHDD of 354 with a margin, or dead band, of 1%. This dead band value gives a margin of +/- 1% where if AHDD and NHDD differ by any less than that, there is no WNA charge/credit. Because weather was colder than normal, the dead band is subtracted from NHDD.

 $\frac{\text{NHDD +/- (NHDD * 1\%)}}{\text{AHDD}} = \frac{182 + (182 * 1\%)}{354} = \frac{182 + 1.82}{354} = \frac{183.82}{354} = 0.519266$ 

3. HL is then multiplied by this 0.519266 to derive the normalize gas usage.

(230.14 \* 0.519266) = 119.5038 Ccf

4. HL is then subtracted from the normalized gas usage to derive the adjustment for weather normalization.

119.5038 – 230.14 Ccf = -110.636229 Ccf

5. This difference (-110.636229) is then multiplied by the DC of \$0.66967/Ccf to provide the WNA credit of approximately \$74.09. There is no proration because the billing cycle fell completely within the WNA period. In the below result, the customer receives a \$74.09 credit on their bill.

-110.636229 Ccf \* \$0.66967/Ccf = \$(74.09)

#### V. Fiscal Year and May Weather Trends

The purpose of this section is to show recent weather experience, and the specific variation that occurred in normal May weather versus May 2022 mid to late month weather.

Below, Table 1 shows the monthly AHDD superimposed onto the NHDD over 4 fiscal years. In Table 1, one can see a higher heating degree day number in the colder season months as opposed to the warmer season months. When the two curves deviate from one another, this represents a difference in the AHDD from the NHDD.



Table 1. Monthly Degree Day Trending – Actual vs. Normal Heating Degree Days

Below, Table 2 shows the cumulative heating degree days by fiscal year. Comparing Fiscal Year 2019 from 2022 (thus far), the cumulative AHDD decreased from 4,362 to 3,853.





Below Table 3 shows the May AHDD and NHDD used in the Company's May 2022 WNA calculations; it shows the May 2021 AHDD and NHDD for comparison. In May 2022, the AHDD dropped dramatically mid-month compared to NHDD. After May 11<sup>th</sup>, 2022, there was 1 AHDD in bills whereas NHDD in bills for same period was 47 days. In comparison, FY21 had 55 AHDD for that same period.

		AHDD		
May Day	NHDD	FY 2021	FY 2022	
1	4	9	6	
2	3	0	0	
3	5	0	1	
4	5	0	5	
5	5	0	0	
6	5	7	9	
7	4	6	15	
8	3	11	13	
9	3	13	4	
10	3	7	1	
11	3	7	1	
12	3	7	0	
13	5	5	0	
14	4	2	0	
15	2	1	0	
16	2	3	0	
17	3	1	0	
18	4	0	0	
19	4	0	0	
20	3	0	0	
21	4	0	0	
22	3	0	0	
23	2	0	0	
24	1	0	0	
25	2	0	0	
26	1	0	1	
27	1	0	0	
28	1	4	0	
29	1	14	0	
30	1	15	0	
31	0	3	0	
Total	90	115	56	

**Table 3. Historical May Heating Degree Days** 

#### VI. May 2022 AHDD & Residential Customer Impact

As shown above, a warm weather pattern occurred in mid to late May 2022 that resulted in large WNA charges for many customers.

These increased charges were due to mid to late May warm weather's percent variance of NHDD versus AHDD, as detailed below. For a number of customers, their bill usage period variance of NHDD versus AHDD resulted in a large WNA charge. Below, Table 4 details 7 billing periods' NHDD, AHDD, total residential WNA charges and average residential service agreement WNA charge.

Heating Degree	NHDD	AHDD	Total WNA	Average WNA
Day Period			Charges	Charge
5/6/22 - 6/6/22	68	44	\$53,386.72	\$2.19
5/7/22 - 6/7/22	63	35	\$83,765.64	\$3.95
5/10/22 - 6/8/22	53	3	\$860,550.81	\$50.05
5/11/22 - 6/9/22	50	2	\$1,020,933.48	\$53.86
5/12/22 - 6/10/22	47	1	\$1,924,011.72	\$87.28
5/24/22 - 6/22/22	8	1	\$102,765.92	\$4.71
5/25/22 - 6/23/22	7	1	\$80,589.03	\$3.38

Table 4. May 2022 Residential Customer Impact by HDD Period

Bolded in Table 4 above are three usage periods where the AHDD denominator was very low and varied greatly from the NHDD, resulting in large WNA charges. In the other examples provided in Table 4 above where NHDD and AHDD were more aligned, the WNA charges were significantly lower.

Below Table 5 shows historical May AHDD compared to NHDD, and the WNA charges applicable to that period. May 2022 was an unusually warm month that resulted in AHDD of 56 compared to NHDD of 90. The variance was particularly strong in mid to late May, as shown in Table 4 above.



Table 5. Historical May Heating Degree Day and WNA Chart<sup>5</sup>

## VII. Actions PGW Has Taken to Address the May 2022 WNA Anomaly

On June 30, 2022, PGW filed a Petition for Emergency Order and proposed tariff revision to exclude May 2022 usage from the WNA calculation to allow PGW to fully refund all WNA charges that were billed for May usage. As requested by PGW, any customers who received a WNA credit for May usage retained the credit.

More recently, on August 2, 2022, PGW filed a Tariff Supplement and Petition for Approval on Less Than Statutory Notice in which PGW proposed a control to cap WNA credits and charges at 25 percent of the total Bill Charge, to ensure that WNA amounts will not have an unusually

<sup>&</sup>lt;sup>5</sup> The stated \$11.29 million is based on data evaluated for this report for May 2022, and it differs from the approximately \$12.4 million stated in the Emergency Petition. It was noted in the Emergency Petition that \$12.4 million was an estimate.

adverse effect on PGW's customers. This request also sought to provide continued financial stability for PGW such that its financial condition not diverge significantly from the current expectations of PGW's bondholders or rating agencies. Maintaining PGW's financial integrity and current bond rating keeps financial costs low, which, in turn, benefits ratepayers.

The cap will work as follows. In Example #1 in Section IV WNA Formula herein, the customer would have been charged a WNA of \$106.29. With the introduction of a 25% cap on total Bill Charges, the customer would have been charged a WNA of \$9.24. The total Bill Charge in this Example were \$143.25. Excluding the WNA of \$106.29, total charges were \$36.96. The 25% cap would be \$9.24. Since the calculated WNA of \$106.29 exceeds the proposed 25% cap, the cap would result in a billed WNA of \$9.24.

Adjusted WNA = (Total Bill Charge) x 25% = (\$143.25 - \$106.29) x 25% = \$36.96 x 25% = \$9.24.

Likewise, in Example #3 in Section IV WNA Formula herein, the customer would have been credited a WNA of \$74.09. With the introduction of a 25% cap on total Bill Charge, the customer would have been credited \$56.55. The total Bill Charge in this Example were \$152.09. Excluding the WNA of \$(74.09), total charges were \$226.18. The 25% cap would be \$56.55. Since the calculated WNA of \$(74.09) exceeds the proposed 25% cap, the cap would result in a billed WNA credit of \$56.55.

Adjusted WNA = (Total Bill Charge ) x 25% = (\$152.09 – (-\$74.09)) x 25% = \$226.18 x 25% = \$56.55.

Below, Table 6 illustrates the estimated impact on prior fiscal year WNA charges with the application of the 25% cap, along with the estimated average impact per customer service agreement for those affected by the 25% WNA Cap.

Fiscal Year	(A)	(B)	$(\mathbf{C}) = (\mathbf{B}) - (\mathbf{A})$	Estimated Average Impact per Affected
	WNA Billings (Actual)	Estimated WNA Billings (25% Cap)	Estimated Dollar Impact (25% Cap)	Customer SA with 25% Cap
FY 2019	\$1,592,512	\$(48,055)	\$(1,640,567)	\$(12.37)
FY 2020	\$10,339,901	\$10,439,654	\$99,752	\$3.48
FY 2021	\$11,668,061	\$11,631,071	\$(36,990)	\$(4.03)
FY 2022	\$34,373,495	\$24,103,688	\$(10, 269,668)	\$(54.16)

## Table 6. WNA Control

Numbers in parentheses represent a bill credit in the favor of the customer. FY 2022 numbers are through June 2022 billings and inclusive of approximately \$11.3 million in WNA charges related to the May 2022 usage month.<sup>6</sup>

## VIII. Conclusion

As experienced this past May 2022, mid to late month warm weather AHDD variance compared to NHDD resulted in large WNA charges. In this investigative review, PGW did not identify a misapplication of or error in applying the long-standing WNA formula. In order to prevent a reoccurrence of the May 2022 experience, PGW has proposed a "cap" on the maximum charge or credit that can be imposed by the WNA. PGW's proposed 25% cap would protect customers from large WNA charges and also ensure that PGW retains protection from weather variations.

<sup>&</sup>lt;sup>6</sup> WNA billings herein are from data analysis of WNA charges from PGW's billing system and vary from the totals reported in PGW's Weather Normalization Adjustment (WNA) Annual Reports. Adjustments to report totals may include, but are not limited to, out of period adjustments and timing of billings.