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June 29, 2020

In The Matter of the Petition of
Public Service Electric and Gas Company
to Revise its Weather Normalization Charge
for the 2020-2021 Annual Period

BPU Docket No. _____

VIA BPU E-FILING SYSTEM & ELECTRONIC MAIL

Aida Camacho-Welch, Secretary
Board of Public Utilities
44 South Clinton Avenue, 3rd Flr.
P.O. Box 350
Trenton, New Jersey 08625-0350

Dear Secretary Camacho-Welch:

Public Service Electric and Gas Company respectfully submits its Petition, Testimony and Supporting Schedules in the above-referenced proceeding on the Board of Public Utilities' E-Filing system and electronic mail.

Very truly yours,

Matthew M. Weissman

Attachment
C Attached Service List

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STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF PUBLIC SERVICE ELECTRIC AND GAS COMPANY TO REVISE ITS WEATHER NORMALIZATION CHARGE FOR THE 2020-2021 ANNUAL PERIOD	)))))	PETITION BPU Docket No._____

Public Service Electric and Gas Company ("PSE&G" or "Company"), a corporation of the State of New Jersey, having its principal offices at 80 Park Plaza, Newark, New Jersey, respectfully petitions the New Jersey Board of Public Utilities ("Board" or "BPU") as follows:

INTRODUCTION

1. PSE&G is a public utility engaged in the distribution of electricity and the provision of Basic Generation Service ("BGS") and distribution of gas and the provision of Basic Gas Supply Service ("BGSS") for residential, commercial, and industrial purposes within the State of New Jersey. PSE&G provides service to approximately 2.2 million electric and 1.8 million gas customers in an area having a population in excess of six million persons and that extends from the Hudson River opposite New York City, southwest to the Delaware River at Trenton, and south to Camden, New Jersey.

2. PSE&G is subject to regulation by the Board for the purposes of setting its retail distribution rates and to assure safe, adequate, and reliable electric distribution and natural gas distribution service pursuant to N.J.S.A. 48:2-21 *et seq*.

PSE&G WEATHER NORMALIZATION CHARGE DESCRIPTION

3. This filing seeks BPU approval of PSE&G's request to recover from customers $33,742,007 over the 2020-2021 Winter Period (*i.e.*, October 1-May 31). The Weather Normalization Charge ("WNC") will be recovered from PSE&G gas customers receiving service under Rate Schedules Residential Service (RSG), General Service (GSG), and Large Volume Gas (LVG) during the 2020-2021 Winter Period.

4. B.P.U.N.J. No. 15 Gas Tariff Sheets Nos. 45, 46, 47 ("WNC Tariff") were initially approved by the Board on July 9, 2010 as part of the Stipulation of Settlement of PSE&G's 2009-2010 base rate case. Decision and Order, *I/M/O the Petition of PSE&G for Approval of an Increase in Electric and Gas Rates and for Changes in the Tariffs for Electric and Gas Service*, Dkt. No. GR09050422 (NJBPU July 9, 2010).

5. The WNC Tariff requires PSE&G to calculate, at the end of each Winter Period, the level by which Margin Revenues differed from what would have resulted if normal weather had occurred. "Margin Revenues," which directly impact the Company's earnings, are the distribution revenues from relevant rate classes from the per therm charge. The base level of normal degree days for the 2019-2020 Winter Period is defined in PSE&G's WNC Tariff. As approved by the Board, any excess or deficiency is to be credited or recovered in the following year during the Winter Period through the WNC.

6. In accordance with the WNC Tariff, the Company is required to true-up the Degree Day Consumption Factors utilized in the determination of the proposed WNC at the end of the Winter Period. Schedule SAW-WNC-1, included in the testimony of Stephen A. Wreschnig (Attachment 1), presents the true-up of the 2019-2020 Winter Period Degree Day Consumption Factors.

7. In addition, the revised WNC Tariff Sheets (Attachment 4) reflect updated Degree Day Consumption Factors for the 2020-2021 Winter Period.

8. Actual heating degree days for the 2019-2020 Winter Period were 246.10 degree days less than the normal heating degree days (adjusted for a ½ percent dead band). *See* Attachment 1, Schedule SAW-WNC-2. The 246.10 heating degree days decrease from the normal degree days results in a Margin Revenue deficiency of $33,939,806. See Attachment 1, Schedule SAW-WNC-2.

9. PSE&G has made one adjustment to the Margin Revenue excess to calculate the 2020-2021 WNC collection request in accordance with the WNC Tariff, as described in the Testimony of Donna M. Powell, Assistant Controller (Attachment 2) and the Testimony of Stephen Swetz, Senior Director (Attachment 3). In Docket No. GR19060761, the Board approved the refund of $8,201,995 over the 2019-2020 Winter Period. Due to the warmer than normal 2019-2020 winter weather, customer volumes were lower than anticipated, which resulted in a shortfall of the 2019-2020 Winter Period refund. The Company refunded $8,004,196 resulting in a remaining

balance to be refunded to customers of $197,799. The Margin Revenue deficit of $33,939,806 net of $197,799 equals a total deficit of $33,742,007.

10. Based on the Board-approved method for calculating the WNC, the Company respectfully requests approval to recover from the applicable customer classes $33,742,007 during the 2020-2021 Winter Period. (See Attachment 2, Schedule DMP-WNC-4).

12. In order to recover this under-collection, PSE&G proposes a WNC of $0.019308 per balancing therm without New Jersey Sales and Use Tax ("SUT") ($0.020587 per Balancing therm including SUT). For the supporting calculation, see Attachment 3, Testimony of Stephen Swetz.

13. As a result of the proposed WNC for the 2020-2021 WNC Winter Period, as described in the testimony of Stephen Swetz, PSE&G's typical residential gas heating customers using 172 therms in a winter month and 1,040 therms annually would experience an increase in their annual bill from $871.88 to $889.66 or $17.78 or approximately 2.04%, based upon Delivery Rates and BGSS-RSG charges in effect on June 1, 2020, with the WNC set to the rate that was in effect for the 2019-2020 Annual Period, and assuming the customer receives commodity service from PSE&G.

14. Attached hereto and made a part of this Petition are:

a. The testimony and supporting schedules of Stephen A. Wreschnig, Manager, Electric and Gas Sales and Revenue Forecasting (Attachment

1), which describe and support the calculation of the therm sales subject to the WNC, the sales forecast of Balancing Therms used in determining the WNC, the normal heating degree days, and development of the proposed monthly Degree Day Consumption Factors to be used for the 2020-2021 Winter Period.

b. The testimony and supporting schedules of Donna M. Powell, Assistant Controller-PSE&G (Attachment 2), which describe and support the Company's calculation of the 2019-2020 Margin Revenue deficiency and adjustment to the WNC balance supporting the proposed 2020-2021 Winter Period WNC rate.

c. The testimony and supporting schedule of Stephen Swetz, Senior Director-Corporate Rates and Revenue Requirements, PSEG Services Corporation (Attachment 3), which describe and support the Company's derivation of the WNC to be implemented for the 2020-2021 Winter Period and collected from the Company's RSG, GSG, and LVG customers.

d. Proposed B.P.U.N.J. No. 16 Gas Tariff Sheets Nos. 45, 46, and 47 in clean and redlined form (Attachment 4) to become effective on October 1, 2020.

e. Typical Residential Gas Bill Impacts associated with the proposed WNC (Attachment 5).

f. Form of Notice of Filing and Public Hearing (Attachment 6).

COMMUNICATIONS

Communications and correspondence related to the Petition should be sent as follows:

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CONCLUSION AND REQUESTS FOR APPROVAL

For all the foregoing reasons, PSE&G respectfully requests that the Board retain jurisdiction of this matter and review and expeditiously issue an order approving this Petition, specifically:

1. Approving the Company's request to recover from the applicable customer classes $33,742,007 in under-collected revenues, which will be collected over the 2020-2021 Winter Period.

2. Finding that the proposed rates and charges set forth in the proposed tariff for Gas Service, Public Service Electric and Gas Company, B.P.U.N.J. No. 16, Gas Service, referred to herein and as set forth in Attachment 4, are just and reasonable.

3. Authorizing PSE&G to implement the rates proposed herein on or about October 1, 2020.

Respectfully submitted,

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

Matthew M. Weissman, Esq.
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DATED: June 29, 2020
Newark, New Jersey

STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF	)	
PUBLIC SERVICE ELECTRIC AND GAS	)	PETITION
COMPANY TO REVISE ITS WEATHER	)	BPU Docket No._____
NORMALIZATION CHARGE FOR THE	)	
2020-2021 ANNUAL PERIOD	)	

CERTIFICATION

I, Michael P. McFadden, of full age, certifies as follows:

1. I am Manager of Revenue Requirements of PSEG Services Corporation.

2. I have read the contents of the foregoing Petition, and the information contained therein are true and correct to the best of my knowledge, information, and belief.

Dated: June 29, 2020

BY _____
Michael P. McFadden

ATTACHMENT 1

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
STEPHEN A. WRESCHNIG
MANAGER, ELECTRIC AND GAS SALES
AND REVENUE FORECASTING

Q. Please state your name and business address.

A. My name is Stephen A. Wreschnig. My business address is 80 Park Plaza, T-8, Newark, New Jersey 07102.

Q. By whom are you employed and in what capacity?

A. I am Manager, Electric and Gas Sales and Revenue Forecasting for PSEG Services Corporation, a subsidiary of Public Service Enterprise Group Incorporated (PSEG or Enterprise). In this capacity, my major responsibility is the supervision of the development of the electric and gas sales and revenue forecasts for PSE&G.

Q. Please summarize your professional experience in the utility industry.

A. Prior to my association with PSEG, I held the position of Manager, Forecasting & Economic Analysis at Duquesne Light Company from 1999 to 2007. From 1997 until 1999 I was a Director with PNR & Associates, later merged with INDETEC International, a consulting firm specializing in providing market research and forecasting for the utility industry. Prior to this experience, I served

in various forecasting functions at Duquesne Light, Wisconsin Electric Power Company, and the Wisconsin Division of State Energy.

Q. What is your educational background?

A. I received a Master of Science degree in Economics from the University of Wisconsin-Madison. My undergraduate degree is a B.A. in Economics from Michigan State University.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss the calculation of the margin revenues subject to the Weather Normalization Charge (WNC) from the 2019-2020 Winter Period (i.e., the eight consecutive calendar months from October of one calendar year through May of the following calendar year). In addition, I describe the sales forecast of balancing therms that is used in the determination of the Weather Normalization Charge. Finally, I describe the development of the proposed monthly degree day consumption factors and the normal weather data to be used for the 2020-2021 Winter Period.

Q. Does your testimony include any illustrative schedules?

A. Yes. My testimony includes schedules that were prepared by me or under my direction and supervision. The schedules are as follows:

(1) Schedule SAW-WNC-1 shows the true-up calculation for the residential coefficients to account for the difference between the actual and the

projected number of customers on which the coefficients embodied in the tariff were based.

(2) Schedule SAW-WNC-2 compares the actual calendar month degree days for the 2019-2020 Winter Period to the normal calendar month degree days. It also presents the calculation of the deficiency in WNC margin revenues for the 2019/2020 Winter Period.

(3) Schedule SAW-WNC-3 presents the calculation of the average daily usage of gas for the June 2020-September 2020 period used in the calculation of forecasted balancing therms.

(4) Schedule SAW-WNC-4 summarizes the gas calendar-month sales forecast for the October 2020 – May 2021 recovery period and presents the calculation of the balancing therms.

(5) Schedule SAW-WNC-5 shows the calculation of the Residential Service (RSG) rate-specific balancing therm share of delivered sales for the October 2020-September 2021 period.

(6) Schedule SAW-WNC-6 presents the development of the proposed WNC monthly Degree Day Consumption Factors to be used for the 2020-2021 Winter Period.

(7) Schedule SAW-WNC-7 contains the updated base level of normal degree days for the 2020-2021 Winter Period based on the 20 year period ending December 2019.

(8) Schedule SAW-WNC-8 contains the the Gas Sales Forecast Model Documentation

Q. Please describe the Weather Normalization Charge.

A. The Company's WNC is a rate mechanism that, in general, mitigates the financial effect of variations from the normal weather on which base rates are set, on both the company and its customers receiving service under the RSG, General Service (GSG), and the Large Volume Service (LVG) rate schedules. Variances in actual degree days from normal for each day are measured and accumulated over the calendar-month for each month in the Winter Period. These monthly variances are adjusted for a degree day deadband which is ½ percent of the normal calendar-month degree days. The resulting cumulative degree day variance, along with the trued-up degree day consumption factors, determines, along with any prior WNC balances, the adjustment to customers' bills in the following Winter Period. This adjustment is either a surcharge to collect a revenue deficiency as a result of warmer than normal weather or a credit to customers to refund the excess revenues collected as a result of colder than normal weather.

Q. How are the trued-up monthly degree day consumption factors developed?

A. The monthly degree day consumption factors for the RSG Heating customers and for the RSG Non-Heating customers are based on regression models of use per customer. The consumption factor for these two customer groups are, as a result, calculated by multiplying the consumption factor per customer by the forecasted number of customers in each month. The trued-up consumption

factors for these two groups are the consumption factors embodied in the tariff adjusted to reflect the actual number of customers during the months of the 2019-2020 Winter Period. The trued-up monthly degree day consumption factors are calculated, as Schedule SAW-WNC-1 shows, by multiplying the RSG Heating and the RSG Non-Heating degree day consumption factors by the ratio of the actual number of customers to the forecasted number of customers that were incorporated into the original calculation.

Q. Are the degree day consumption factors for Residential Service the only consumption factors that are trued-up?

A. Yes they are.

Q. What is the result of the comparison of the actual heating degree days experienced in the most recent winter 2019-2020 Winter Period and the normal calendar-month heating degree days?

A. For the 2019-2020 Winter Period, the actual heating degree days were 250.95 less than the normal heating degree days. The WNC requires that the heating degree day monthly variances must be adjusted for the ½ percent deadband in which the WNC is operable. After this adjustment, the cumulative actual heating degree days were 246.10 less than normal. See Schedule SAW-WNC-2.

Q. What is the impact of the deadband adjusted heating degree variance on margin revenues?

A. The 246.10 heating degree days decrease from the normal degree day total results in a margin revenue deficiency of $33,939,806. The calculations of the heating degree day variance and the margin revenue impact are set forth on Schedule SAW-WNC-2.

Q. What is the methodology used to project firm gas sales for the recovery year in order to derive the Company's WNC rates?

A. The forecast and the methodology used to project firm gas sales for the recovery year in order to derive the Company's WNC rates is the same as the sales forecast which supports PSE&G's Basic Gas Supply Service (BGSS) filing of June 1, 2020. A summary of the forecast of normalized gas sales for the eight month period of October 2020 through May 2021 is set forth on Schedule SAW-WNC-4.

Q. How was the sales forecast summarized in Schedule SAW-WNC-4 developed?

A. The sales forecast summarized in Schedule SAW-WNC-4 is for firm sales by customer class and rate. This forecast was developed from a set of econometric models in which the customer-class, rate specific sales, or sales per customer in the case of the residential models, were regressed on a set of variables including those that captured both weather and economic factors that influence sales. The estimated models are then used to forecast consumption under normal weather conditions with projected levels of economic and demographic activity. The

forecast is then adjusted for the estimated impacts of energy efficiency measures not captured in the econometric models. The forecast models and the methodology employed are described in detail in Schedule SAW-WNC-8 of my testimony.

Q. How is the forecast of balancing therms developed?

A. The projected balancing therms are calculated by subtracting the projected class and rate-specific average daily usage during the billing months of June 2020 through September 2020 from the total delivered calendar-month sales for the months of October 2020 through May 2021 as stipulated in Docket No. GR19060699. The projected average daily use is derived from the billing-month forecast described above divided by the average number of days in the billing-month. This calculation is shown in Schedule SAW-WNC-3. This average use is then multiplied by the number of days in the calendar-month and subtracted from the total projected calendar-month sales. In the case that the balancing therms calculated are less than zero, they are set to zero. This calculation is shown in Schedule SAW-WNC-4.

Q. What percentage of the RSG total delivered sales is the forecasted balancing therms that is to be used in the calculation of the RSG 3.0% Rate Cap Limit for the 2019-2020 Winter Period?

A. The projected balancing therms are estimated to be 73.32 percent of RSG delivered sales. See Schedule SAW-WNC-5.

Q. How are the updated monthly degree day consumption factors developed?

A. Schedule SAW-WNC-6 shows the calculation of the new monthly degree day consumption factors to be utilized in the 2020-2021 Winter Period. The calculation is based on the estimated coefficients from the models, as described above. The impact of the monthly degree days is the sum of the coefficient on the heating degree day variable and the product of the coefficient and the value of the economic/demographic variable of any variable and or variables that are interactive with heating degree days, such as the price-heating degree day interactive variable, to arrive at the total therm per heating degree day estimate. In the case of the residential rates, this is multiplied by the projected number of customers since the models, and as a result the coefficients, are based on sales per customer – not on total customers.

Q. Have the base level of normal degree days for the defined Winter Period months been updated?

A. Yes, the base level of normal degree days for the defined winter period months for the 2020-2021 Winter Period have been calculated based on the 20-year period ending December 2019 and are shown in Schedule SAW-WNC-7.

Q. Does this conclude your testimony?

A. Yes, it does.

SCHEDULE SAW-WNC-1

Calculation of the Customer True-Up to the RSG-Residential Degree Day Consumption Factors

	RSG-Residential Heating					RSG-Residential Non-Heating				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			(2) / (1)		(4) x (3)			(7) / (6)		(9) x (8)
	Customers			Consumption	Trued-Up Consumption	Customers			Consumption	Trued-Up Consumption
Month	Forecast	Actual	Adjustment	Factor	Factor	Forecast	Actual	Adjustment	Factor	Factor
Oct-19	1,401,976	1,451,822	1.0355541	147,748	153,001	291,241	241,256	0.8283724	3,466	2,871
Nov-19	1,408,138	1,460,302	1.0370447	233,569	242,221	293,051	243,207	0.8299136	8,816	7,317
Dec-19	1,404,673	1,458,630	1.0384125	228,514	237,292	289,859	242,224	0.8356615	11,406	9,532
Jan-20	1,405,467	1,458,071	1.0374281	264,384	274,279	291,201	238,216	0.8180466	12,027	9,839
Feb-20	1,401,019	1,463,687	1.0447303	270,093	282,174	289,235	236,051	0.8161218	11,928	9,735
Mar-20	1,412,662	1,470,857	1.0411953	271,716	282,909	290,415	234,785	0.8084465	12,442	10,059
Apr-20	1,414,721	1,465,278	1.0357364	251,638	260,631	289,214	232,077	0.8024404	12,764	10,242
May-20	1,415,262	1,462,026	1.0330426	182,090	188,107	289,375	231,480	0.7999309	10,707	8,565

SCHEDULE SAW-WNC-2

Margin Revenue Deficiency/Surplus Calculation 2019-2020 Winter Period

Degree Day Consumption Factors

	RSG-Residential		Commercial			Industrial			Heating Degree Days			
			GSG		LVG	GSG		LVG				
Month	**Heating**	**Non-Heating**	**Heating**	**Non-Heating**		**Heating**	**Non-Heating**		**Normal**	**Actual**	**Deadband**	**Variance**
Oct-19	153,001	2,871	15,975	836	81,850	557	-	6,700	243.01	178.25	1.22	63.54
Nov-19	242,221	7,317	27,829	2,529	81,850	1,103	127	6,700	516.21	649.60	2.58	-130.81
Dec-19	237,292	9,532	49,065	3,510	81,850	1,393	193	6,700	827.33	836.29	4.14	-4.82
Jan-20	274,279	9,839	62,788	3,779	82,421	1,927	221	6,580	1002.61	805.46	5.01	192.14
Feb-20	282,174	9,735	54,286	3,903	82,421	1,564	230	6,580	858.04	731.63	4.29	122.12
Mar-20	282,909	10,059	55,140	3,962	82,421	2,092	238	6,580	691.71	540.31	3.46	147.94
Apr-20	260,631	10,242	55,446	3,984	82,421	1,358	226	6,580	357.63	446.13	1.79	-86.71
May-20	188,107	8,565	12,789	3,864	82,421	732	118	6,580	123.71	181.63	0.62	-57.30
Total									4,620.25	4,369.30	23.11	246.10

Therm Deficiency/(Surplus) - HDD Variance x Degree Day Consumption Factors

	RSG-Residential		Commercial			Industrial			Margin Revenue Factors		
			GSG		LVG	GSG		LVG			
Month	**Heating**	**Non-Heating**	**Heating**	**Non-Heating**		**Heating**	**Non-Heating**		**RSG**	**GSG**	**LVG**
Oct-19	9,721,684	182,423	1,015,052	53,119	5,200,749	35,392	-	425,718	$ 0.351392	$ 0.283256	$ 0.041810
Nov-19	(31,684,929)	(957,137)	(3,640,311)	(330,818)	(10,706,799)	(144,283)	(16,613)	(876,427)	$ 0.351392	$ 0.283256	$ 0.041810
Dec-19	(1,143,747)	(45,944)	(236,493)	(16,918)	(394,517)	(6,714)	(930)	(32,294)	$ 0.360706	$ 0.288299	$ 0.041979
Jan-20	52,699,967	1,890,465	12,064,086	726,097	15,836,371	370,254	42,463	1,264,281	$ 0.360706	$ 0.288299	$ 0.041979
Feb-20	34,459,089	1,188,838	6,629,406	476,634	10,065,253	190,996	28,088	803,550	$ 0.360706	$ 0.288299	$ 0.041979
Mar-20	41,853,557	1,488,128	8,157,412	586,138	12,193,363	309,490	35,210	973,445	$ 0.360706	$ 0.288299	$ 0.041979
Apr-20	(22,599,314)	(888,084)	(4,807,723)	(345,453)	(7,146,725)	(117,752)	(19,596)	(570,552)	$ 0.360706	$ 0.288299	$ 0.041979
May-20	(10,778,531)	(490,775)	(732,810)	(221,407)	(4,722,723)	(41,944)	(6,761)	(377,034)	$ 0.360706	$ 0.288299	$ 0.041979
Total	72,527,775	2,367,916	18,448,619	927,393	20,324,971	595,438	61,859	1,610,687			

Margin Revenue Deficiency/(Surplus) - Therm Deficiency/(Surplus) x Margin Revenue Factors

	RSG-Residential		Commercial			Industrial			Rate Total			
			GSG		LVG	GSG		LVG				
Month	**Heating**	**Non-Heating**	**Heating**	**Non-Heating**		**Heating**	**Non-Heating**		**RSG**	**GSG**	**LVG**	**Total**
Oct-19	$ 3,416,122	$ 64,102	$ 287,519	$ 15,046	$ 217,443	$ 10,025	$ -	$ 17,799	$ 3,480,224	$ 312,591	$ 235,243	$ 4,028,057
Nov-19	$ (11,133,831)	$ (336,330)	$ (1,031,140)	$ (93,706)	$ (447,651)	$ (40,869)	$ (4,706)	$ (36,643)	$ (11,470,161)	$ (1,170,421)	$ (484,295)	$ (13,124,877)
Dec-19	$ (412,557)	$ (16,572)	$ (68,181)	$ (4,878)	$ (16,561)	$ (1,936)	$ (268)	$ (1,356)	$ (429,129)	$ (75,262)	$ (17,917)	$ (522,308)
Jan-20	$ 19,009,194	$ 681,902	$ 3,478,064	$ 209,333	$ 664,795	$ 106,744	$ 12,242	$ 53,073	$ 19,691,097	$ 3,806,383	$ 717,868	$ 24,215,348
Feb-20	$ 12,429,600	$ 428,821	$ 1,911,251	$ 137,413	$ 422,529	$ 55,064	$ 8,098	$ 33,732	$ 12,858,421	$ 2,111,826	$ 456,261	$ 15,426,509
Mar-20	$ 15,096,829	$ 536,777	$ 2,351,774	$ 168,983	$ 511,865	$ 89,226	$ 10,151	$ 40,864	$ 15,633,606	$ 2,620,133	$ 552,729	$ 18,806,469
Apr-20	$ (8,151,708)	$ (320,337)	$ (1,386,062)	$ (99,594)	$ (300,012)	$ (33,948)	$ (5,650)	$ (23,951)	$ (8,472,045)	$ (1,525,253)	$ (323,964)	$ (10,321,262)
May-20	$ (3,887,881)	$ (177,025)	$ (211,268)	$ (63,831)	$ (198,255)	$ (12,092)	$ (1,949)	$ (15,828)	$ (4,064,906)	$ (289,141)	$ (214,083)	$ (4,568,130)
Total	$ 26,365,769	$ 861,337	$ 5,331,957	$ 268,767	$ 854,153	$ 172,213	$ 17,918	$ 67,691	$ 27,227,107	$ 5,790,855	$ 921,844	$ 33,939,806

SCHEDULE SAW-WNC-3

Calculation of Forecasted June 2020-September 2020 Average Daily Usage

Class	Rate	Group	Billed Therm Sales June-20	July-20	August-20	September-20	Total	Therms per Day
Residential	**RSG**	**Heating**	44,434,033	28,855,748	25,175,184	28,007,794	126,472,759	1,044,407
		Non-Heating	2,544,802	2,446,183	2,110,306	2,167,197	9,268,488	76,539
Commercial	**GSG**	**Heating**	6,363,606	5,344,197	5,154,230	5,163,897	22,025,930	181,889
		Non-Heating	2,330,115	2,068,107	2,011,893	1,798,547	8,208,662	67,787
	LVG		26,284,034	21,774,069	18,648,057	21,348,989	88,055,149	727,156
Industrial	**GSG**	**Heating**	151,786	106,803	103,610	196,051	558,250	4,610
		Non-Heating	53,951	53,251	33,407	41,840	182,449	1,507
	LVG		5,104,483	3,009,721	5,200,713	3,634,820	16,949,737	139,970
Average Billing-Month Days			30.33	30.86	29.38	30.52	121.0952	

SCHEDULE SAW-WNC-4

Balancing Therm Use Calculation, October 2020 - May 2021
(therms)

Class	Rate	Group	Category	October-20	November-20	December-20	January-21	February-21	March-21	April-21	May-21	October-20 September-21
Residential	**RSG**	**Heating**	**Delivered Sales**	65,270,130	148,604,339	225,403,007	289,967,465	250,424,912	193,012,074	111,867,103	49,912,548	1,449,277,584
			less: **Jun-Sep Ave x Days**	32,376,617	31,332,210	32,376,617	32,376,617	29,243,396	32,376,617	31,332,210	32,376,617	
			equals: **Balancing Use**	32,893,513	117,272,129	193,026,390	257,590,848	221,181,516	160,635,457	80,534,893	17,535,931	1,080,670,677
		Non-Heating	**Delivered Sales**	2,072,647	8,180,791	8,569,046	5,257,248	4,545,753	3,876,959	3,331,260	2,643,222	48,071,477
			less: **Jun-Sep Ave x Days**	2,372,709	2,296,170	2,372,709	2,372,709	2,143,092	2,372,709	2,296,170	2,372,709	
			equals: **Balancing Use**	-	5,884,621	6,196,337	2,884,539	2,402,661	1,504,250	1,035,090	270,513	20,178,011
Commercial	**GSG**	**Heating**	**Delivered Sales**	10,231,459	23,156,738	39,887,945	48,092,727	39,188,747	31,003,734	17,599,487	8,580,976	236,728,411
			less: **Jun-Sep Ave x Days**	5,638,559	5,456,670	5,638,559	5,638,559	5,092,892	5,638,559	5,456,670	5,638,559	
			equals: **Balancing Use**	4,592,900	17,700,068	34,249,386	42,454,168	34,095,855	25,365,175	12,142,817	2,942,417	173,542,786
		Non-Heating	**Delivered Sales**	2,404,260	3,556,679	5,795,258	5,446,666	5,484,037	4,847,002	3,363,579	2,556,902	41,611,508
			less: **Jun-Sep Ave x Days**	2,101,397	2,033,610	2,101,397	2,101,397	1,898,036	2,101,397	2,033,610	2,101,397	
			equals: **Balancing Use**	302,863	1,523,069	3,693,861	3,345,269	3,586,001	2,745,605	1,329,969	455,505	16,982,142
	LVG		**Delivered Sales**	37,139,284	63,325,901	97,989,654	110,419,326	99,502,408	92,695,427	60,580,558	30,987,412	678,812,830
			less: **Jun-Sep Ave x Days**	22,541,836	21,814,680	22,541,836	22,541,836	20,360,368	22,541,836	21,814,680	22,541,836	
			equals: **Balancing Use**	14,597,448	41,511,221	75,447,818	87,877,490	79,142,040	70,153,591	38,765,878	8,445,576	415,941,062
Industrial	**GSG**	**Heating**	**Delivered Sales**	222,690	933,012	1,662,178	2,129,327	1,778,441	1,272,927	678,167	240,692	9,494,017
			less: **Jun-Sep Ave x Days**	142,910	138,300	142,910	142,910	129,080	142,910	138,300	142,910	
			equals: **Balancing Use**	79,780	794,712	1,519,268	1,986,417	1,649,361	1,130,017	539,867	97,782	7,797,204
		Non-Heating	**Delivered Sales**	60,073	160,279	241,138	309,713	256,224	211,493	144,363	60,603	1,621,666
			less: **Jun-Sep Ave x Days**	46,717	45,210	46,717	46,717	42,196	46,717	45,210	46,717	
			equals: **Balancing Use**	13,356	115,069	194,421	262,996	214,028	164,776	99,153	13,886	1,077,685
	LVG		**Delivered Sales**	5,624,125	7,296,555	8,783,702	11,511,295	10,425,189	10,687,542	5,589,928	5,443,443	82,879,401
			less: **Jun-Sep Ave x Days**	4,339,070	4,199,100	4,339,070	4,339,070	3,919,160	4,339,070	4,199,100	4,339,070	
			equals: **Balancing Use**	1,285,055	3,097,455	4,444,632	7,172,225	6,506,029	6,348,472	1,390,828	1,104,373	31,349,069
Total			**Delivered Sales**	123,024,668	255,214,294	388,331,928	473,133,767	411,605,711	337,607,158	203,154,445	100,425,798	2,548,496,894
			less: **Jun-Sep Ave x Days**	69,559,815	67,315,950	69,559,815	69,559,815	62,828,220	69,559,815	67,315,950	69,559,815	-
			equals: **Balancing Use**	53,764,915	187,898,344	318,772,113	403,573,952	348,777,491	268,047,343	135,838,495	30,865,983	1,747,538,636

SCHEDULE SAW-WNC-5

RSG Balancing Therm Share of Delivered Sales Calculation, October 2020-September 2021
(therms)

Rate	Class	Group	Category	October-20	November-20	December-20	January-21	February-21	March-21	April-21	May-21	June-21	July-21	August-21	September-21	Total	Balancing Delivered (percent)
RSG	Residential	Heating	Balancing Use	32,893,513	117,272,129	193,026,390	257,590,848	221,181,516	160,635,457	80,534,893	17,535,931	-	-	-	-	1,080,670,677	
			Delivered Sales	65,270,130	148,604,339	225,403,007	289,967,465	250,424,912	193,012,074	111,867,103	49,912,548	39,212,812	26,571,828	25,387,358	28,285,580	1,453,919,156	
		Non-Heating	Balancing Use	-	5,884,621	6,196,337	2,884,539	2,402,661	1,504,250	1,035,090	270,513	-	-	-	-	20,178,011	
			Delivered Sales	2,072,647	8,180,791	8,569,046	5,257,248	4,545,753	3,876,959	3,331,260	2,643,222	2,298,511	2,584,736	2,110,589	2,024,586	47,495,348	
		Total	Balancing Use	32,893,513	123,156,750	199,222,727	260,475,387	223,584,177	162,139,707	81,569,983	17,806,444	-	-	-	-	1,100,848,688	73.32%
			Delivered Sales	67,342,777	156,785,130	233,972,053	295,224,713	254,970,665	196,889,033	115,198,363	52,555,770	41,511,323	29,156,564	27,497,947	30,310,166	1,501,414,504	

Degree Day Consumption Factor Calculation

RSG Heating

Month	HDD	Post-2008	Transferred Customers	HDDxWage Coefficient	HDD x Price Coefficient	Value		Customers	Degree Day Consumption Factor
						Real Price	Wage		
Oct-20		(0.0073)	(0.0009)	0.0013		0.7529	86.4800	1,474,832	157,174
Nov-20		(0.0073)	(0.0009)	0.0020		0.7529	86.4800	1,478,391	248,711
Dec-20	0.1441	(0.0073)	(0.0009)	0.0004		0.7529	86.4800	1,477,087	247,054
Jan-21	0.20521	(0.0073)	(0.0009)			0.7368	89.9200	1,466,611	288,954
Feb-21	0.20454	(0.0073)	(0.0009)		(0.0051)	0.7368	89.9200	1,473,364	283,804
Mar-21	0.20253	(0.0073)	(0.0009)		(0.0051)	0.7368	89.9200	1,458,391	277,989
Apr-21	0.19727	(0.0073)	(0.0009)		(0.0072)	0.7368	89.9200	1,500,521	275,716
May-21	0.14541	(0.0073)	(0.0009)		(0.0072)	0.7368	89.9200	1,485,863	195,966

RSG Non-Heating

HDD	HDD x Price Coefficient	Transferred Customers	Value		Customers	Degree Day Consumption Factor
			Real Price	Wage		
0.0140		(0.0237)	0.8675		234,476	(2,282)
0.0583	(0.0225)	(0.0237)	0.8675		235,844	3,549
0.0612	(0.0213)	(0.0237)	0.8675		235,296	4,468
0.0583	(0.0196)	(0.0237)	0.8496		244,586	4,382
0.0558	(0.0180)	(0.0237)	0.8496		238,826	4,006
0.0552	(0.0166)	(0.0237)	0.8496		234,493	4,072
0.0558	(0.0153)	(0.0237)	0.8496		233,944	4,461
0.0384	-	(0.0237)	0.8496		232,958	3,417

	Commercial GSG Heating						Commercial GSG Non-Heating	
		HDDxPrice		HDDxHouseholds		Degree Day Consumption		Degree Day Consumption
Month	HDD	Coefficient	Value	Coefficient	Value	Factor	HDD	Factor
Oct-20				5.9576	3,386	20,172	874	874
Nov-20		(19,793)	0.9007	16.0042	3,386	36,363	2,550	2,550
Dec-20		(12,144)	0.9007	18.1126	3,386	50,391	3,626	3,626
Jan-21		(13,885)	0.8603	22.7449	3,401	65,414	3,831	3,831
Feb-21		(11,112)	0.8603	18.0753	3,401	51,917	3,959	3,959
Mar-21		(12,199)	0.8603	19.1815	3,401	54,744	3,974	3,974
Apr-21		(13,024)	0.8603	20.2032	3,401	57,510	4,027	4,027
May-21		(29,054)	0.8603	9.4847	3,401	7,264	3,961	3,961

Month	Industrial GSG Heating HDD Coefficient	Industrial GSG Heating Degree Day Consumption Factor	Industrial GSG Non-Heating HDD Coefficient	Industrial GSG Non-Heating Degree Day Consumption Factor
Oct-20	446.00	446	0.00	0
Nov-20	1165.94	1166	136.30	136
Dec-20	2178.48	2178	196.12	196
Jan-21	2588.67	2589	228.74	229
Feb-21	1758.19	1758	233.63	234
Mar-21	2212.78	2213	234.77	235
Apr-21	1738.67	1739	232.64	233
May-21	960.37	960	136.33	136

Commercial LVG

Month	HDDxCust		HDDxPrice		Degree Day Consumption Factor
	Coefficient	Value	Coefficient	Value	
Oct-20	27.73959	3385.99	(7,829.99)	0.74998	88,054
Nov-20	27.73959	3385.99	(7,829.99)	0.74998	88,054
Dec-20	27.73959	3385.99	(7,829.99)	0.74998	88,054
Jan-21	27.73959	3401.15	(7,829.99)	0.7077	88,805
Feb-21	27.73959	3401.15	(7,829.99)	0.7077	88,805
Mar-21	27.73959	3401.15	(7,829.99)	0.7077	88,805
Apr-21	27.73959	3401.15	(7,829.99)	0.7077	88,805
May-21	27.73959	3401.15	(7,829.99)	0.7077	88,805

Industrial LVG

	HDDxMfg		HDDxPrice		Degree Day Consumption Factor
	Coefficient	Value	Coefficient	Value	
Oct-20	35.0431	251.00	(1,410.69)	0.72	7,783
Nov-20	35.0431	251.00	(1,410.69)	0.72	7,783
Dec-20	35.0431	251.00	(1,410.69)	0.72	7,783
Jan-21	35.0431	245.00	(1,410.69)	0.68	7,624
Feb-21	35.0431	245.00	(1,410.69)	0.68	7,624
Mar-21	35.0431	245.00	(1,410.69)	0.68	7,624
Apr-21	35.0431	245.00	(1,410.69)	0.68	7,624
May-21	35.0431	245.00	(1,410.69)	0.68	7,624

SCHEDULE SAW-WNC-7

Normal Monthly Weather
(2000-2019 Average)

Calendar Month	Degree Days
October-20	237.73
November-20	526.11
December-20	829.32
January-21	1,004.41
February-21	838.29
March-21	693.37
April-21	354.96
May-21	125.01

Natural Gas Sales Forecast – 2020

Public Service Electric & Gas Company

Finance Department

Electric and Gas Sales and Revenue Forecasting Group

May 2020

Contents

Introduction

The natural gas sales forecast has a key role in both the operating and financial planning processes of Public Service Electric & Gas (PSE&G).

The volumetric and maximum day sendout projections are used in the development of strategies for optimal gas procurement by PSE&G's BGSS supplier.

The sales forecast also serves as the basis for the natural gas revenue forecast that is a key parameter in PSE&G's financial planning process. This includes not only the budgeting process but also the regulatory process.

The purpose of this document is to describe the current forecast methodology, forecast assumptions, and the 2020 gas sales forecast. The first section describes the econometric sales models. A discussion of the forecast assumptions used to develop the sales forecast follows. Section III describes the maximum daily send-out projection. An appendix contains more detailed information on the billing period to calendar month conversion, and forecast tables.

I Model Specification and Estimation

Residential Model

Residential gas sales are determined by the number of residential customers and the amount of gas that each of these customers uses. As a result, the modeling of residential sales is disaggregated into two components: the projection of the number of customers and the estimate of what, on average, each of these customers will use. While the projection of the number of residential natural gas customers can be based on historical trends and expected residential construction activity in the service area, the models utilized to develop the average use forecast are more complicated and are described below.

The demand for energy is a derived demand from the demand for the services that the energy provides. In the case of gas in the residential sector, this is a demand for the three main end-uses of gas: space heating, water heating, and cooking. Standard microeconomic theory suggests that the demand for these gas-fueled end-uses is a function of the real, i.e. inflation adjusted, price of gas, and the income of the household. In addition, since space heating and, to a lesser extent, water heating is affected by the weather; weather also needs to be included in the model specification, i.e.

THERM/CUST = *f*(PRICEGAS, INCOME, WEATHER) [1]

where:

THERM/CUST	= Average gas sales per customer,
PRICEGAS	= Real price of gas,
INCOME	= Measure of customer income,
WEATHER	= Billing-month weather.

While information on individual appliance ownership and consumption is not available, PSE&G does segregate its Residential customer data into those customers that have gas space heating and those that do not. As a result, separate models estimating the average gas sales for space heating customers and non-space heating customers were developed.

Weather is incorporated into the models using billing-month heating degree days (HDD). To allow for the possibility of month-specific response to weather, the heating degree data was multiplied by monthly binary variables to produce month-specific HDD independent variables.

The real price of gas was defined as the annual average revenue per therm divided by the Consumers' Price Index –All Urban Consumers. However, the extreme seasonality of monthly gas consumption made the utilization of this variable directly in a linear specification impractical because it is unrealistic to expect that a change in price would have the same impact, measured in therms,

in January, a high consumption month, as in July where consumption can be only one-tenth the January volume. As a result, this variable was incorporated as an interactive variable with HDD to create the effect that a change in price will affect the magnitude of the response to weather, i.e. a small response in the summer months and a much larger response during the space heating season.

Income is defined as the total real wages and salary disbursements for New Jersey from the U.S. Department of Commerce, Bureau of Economic Analysis. This is a narrower measure than personal income, omitting for example dividends, interest and rental income, and, as a result, is assumed to more accurately reflect the economic well-being of the majority of our customers. The incorporation of this variable directly into a linear specification suffers from the same drawback as that of the price. As a result, this variable was also incorporated into the specification as an interactive variable with HDD. In the models the economic variables were lagged one year to account for the delay in the impact that these variables have on consumer behavior.

As a result, the final functional form of the model that was estimated is:

$$THERM/CUST_t = f(\overline{MONTH}xHDD_t \times PRICEGAS_{a-1}, \overline{MONTH}xHDD_t \times INCOME_{a-1}, \overline{MONTH}xHDD_t) \quad [2]$$

where:

THERM/CUST	= Average gas sales per customer,
PRICEGAS	= Real price of gas,
INCOME	= Real Wage and Salary Disbursements,
HDD	= Heating degree days,
$\overline{MONTH}$	= Vector of binary variables for each heating month,
t	= Billing-month,
a	= Year associated with billing-month, t.

The models were estimated using monthly data from 2006 to June 2019 period (excluding data from 2009 due to distortions resulting from the implementation of a new billing system.)The results of the OLS estimation procedure are summarized in Table 1 and Figures 1 and 2.

As Figures 1 and 2 illustrate, the high values of the coefficients of determination of both the model for gas space heating customers and the model of those customers without gas heating explain an extremely high proportion of the variation from the mean values. The estimates of the individual coefficients of the RSG model estimations are what one would expect given the characteristics of residential natural gas consumption. The key predictor of gas sales to this sector is weather with the weather having a greater impact on those customers with gas space heating than those without. Price is a factor for residential customers during the winter months but, its impact is relatively small.

Figure 1
RSG Space Heating Model
Actual vs. Fitted Values

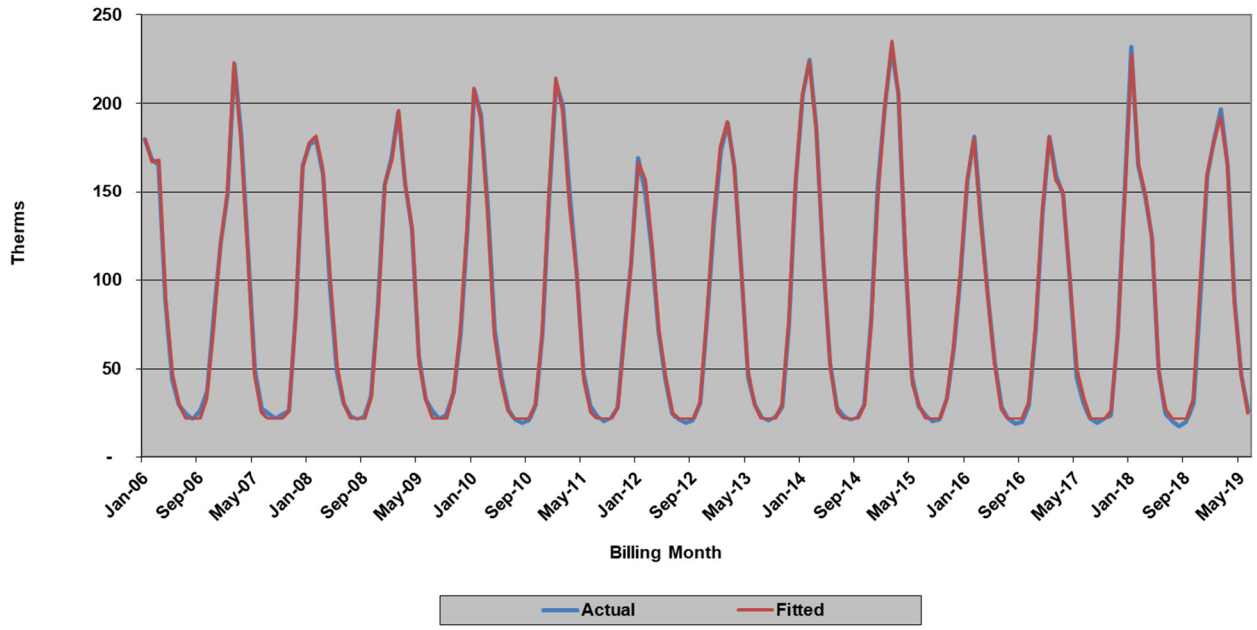
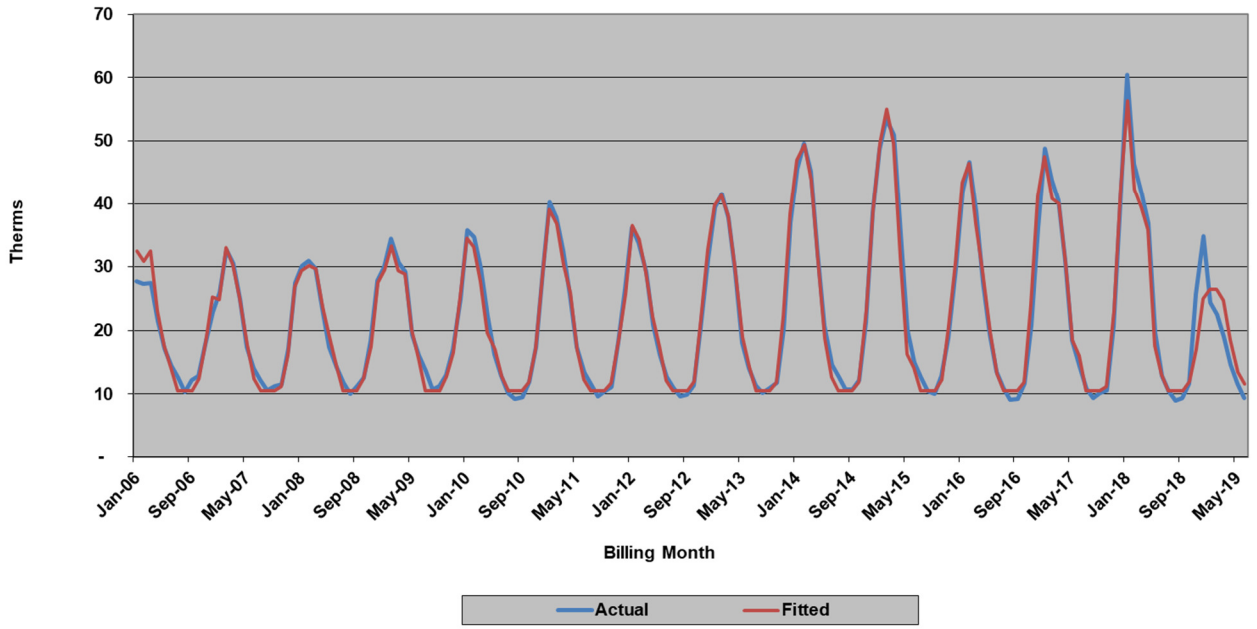


Figure 2
RSG Non-Space Heating Model
Actual vs. Fitted Values



The price elasticity estimates were estimated to be -0.0152 and -0.23 for space heating and non-space heating customers, respectively and consistent with lower gas prices and the lack of a surge in consumption in response to them. The non-space heating elasticity is the result of a similar therm impact of price but, measured over a much smaller base usage. Income was found to have an effect on gas consumption by space heating customers in the fall. This is consistent with income changes resulting affecting when space heating equipment is turned on. The economic downturn appeared to result in a delay in turning on this equipment in the fall reducing use.

Table 1

Estimated Coefficients of the Residential Models

(standard errors in parentheses)

	JAN	FEB	MAR	APR	MAY	JUNE	OCT	NOV	DEC	R2	DW	n
HEATING												
HDD	0.20521 (0.007)	0.20454 (0.007)	0.20253 (0.007)	0.19727 (0.010)	0.14541 (0.007)	0.16118 (0.021)			0.14414 (0.023)	0.999	1.325	150
		FEB -MAR	**APR-MAY**									
PRICE x HDD		-0.00506 (0.002)	-0.00724 (0.004)									
WAGE x HDD							0.00133 (0.00012)	0.00204 (0.00003)	0.00036 (0.00033)			
I-POWER	-0.00730 (0.00126)											
RSG-TRAN	-0.00089 (0.00172)											
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**OCT**	**NOV**	**DEC**	**R2**	**DW**	**n**
NON-HEATING												
HDD	0.05833 (0.002)	0.05585 (0.002)	0.05522 (0.003)	0.05578 (0.004)	0.03841 (0.003)	0.07661 (0.016)	0.01398 (0.007)	0.05829 (0.006)	0.06120 (0.003)	0.974	0.989	150
PRICE x HDD	-0.01960 (0.002)	-0.01800 (0.002)	-0.01664 (0.002)	-0.01531 (0.003)				-0.02253 (0.002)	-0.02129 (0.003)			
RSG-TRAN	-0.02373 (0.00125)											

The second key element of the residential forecast, as noted above, is the projection of the number of residential natural gas customers. This forecast is based on historical trends between customer growth and residential construction activity in the service area and is discussed in the Forecast Assumptions section.

Commercial

The demand for natural gas by the non-residential sector, as with any other factor of production, is a function of the input's price, the price of substitutes (if any) and the level of production. This implies that gas sales to the commercial sector is a function of the real price of gas and the level of "output" of the commercial sector in PSE&G's service territory, i.e. Again, since gas is primarily used for space and/or water heating, weather needs to be included in the specification resulting in the following:

THERMS = *f*(PRICEGAS, OUTPUT, HDD) [3]

where:

THERMS	= Gas Sales,
PRICEGAS	= Real price of gas,
OUTPUT	= Commercial sector output,
HDD	= Heating degree days.

The problem with this specification is that there is not a good measure of output for the local commercial sector. However, if it is assumed that the demand for local commercial output is a function of the local economic and demographic factors, i.e., how many households there are (HSH) and how much money do they have to spend (INCOME), commercial output can then be defined as:

OUTPUT = *f*(INCOME, HSH) [4]

Substituting [4] into [3] yields:

THERMS = *f*(PRICEGAS, INCOME, HSH, HDD) [5]

LVG model was estimated for customers in the commercial sector using monthly billing data from 2005 to June 2019 period (again, excluding 2009).The firm delivery customers in this class whose usage does not exceed 300 Dth are served under rate GSG. These customers are further disaggregated into those with gas space heat and those that heat with other fuels. These two groups of customers are modeled separately. Time period for GSG models set from 2011 to June 2019 period in order to get better estimation results. The larger commercial customers are served under rate LVG. These are also modeled separately.

Historical annual household estimates for New Jersey is available from the U.S. Bureau of the Census. As with the residential models, the strong seasonality associated with commercial gas sales dictates that the economic/demographic variables can be used in the model directly but, need to be used as interactive variables with HDD. In addition, in the models the economic variables were lagged one year to account for the delay in the impact that these variables have

on consumer behavior. As a result, the functional form that was estimated for each of the three groups of commercial customers is[1]:

$$\begin{aligned} THERMS_t = f(&\overline{MONTH} \times HDD_t \times PRICEGAS_{a-1}, \\ &\overline{MONTH} \times HDD_t \times INCOME_{a-1}, \\ &\overline{MONTH} \times HDD_t \times HSH_{a-1,}\, HDD_t) \end{aligned} \quad [6]$$

where:

THERMS	= Gas sales,
PRICEGAS	= Real price of gas,
INCOME	= Real Wage and Salary Disbursements,
HDD	= Heating degree days,
$\overline{MONTH}$	= Vector of binary variables for each heating month,
t	= Billing-month,
a	= Year associated with billing-month, t.

The results of the OLS estimation procedure, summarized in Figures 3-5, show that the commercial models also fit the historical data well.

The estimated coefficients of the three commercial models indicate that while the small commercial space heating are sensitive to price, with an estimated elasticity of -0.25 the non-space heating customers are not, and the large commercial LVG customers are sensitive to price, with an estimated elasticity of -0.043. In addition, while the coefficients on households, the economic indicator in the models, are highly statistically significant, this does not imply large sales increases given the anticipated slow growth in the number of households.

[1] It was not necessary to incorporate month-specific HDD specification since the LVG sales are less sensitive to the weather.

Figure 3
GSG Commercial Space Heating Model
Actual vs. Fitted Values

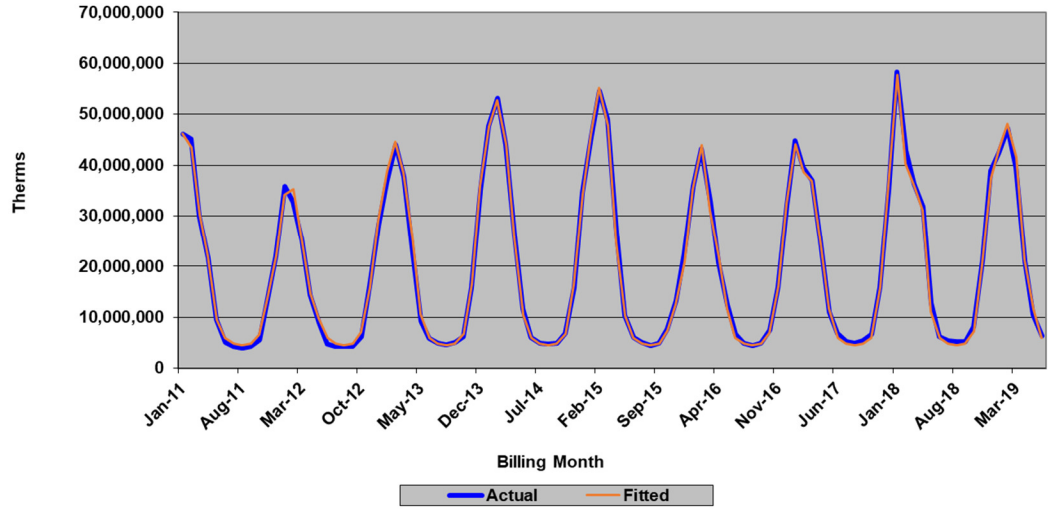


Figure 4
GSG Commercial Non-Space Heating Model
Actual vs. Fitted Values

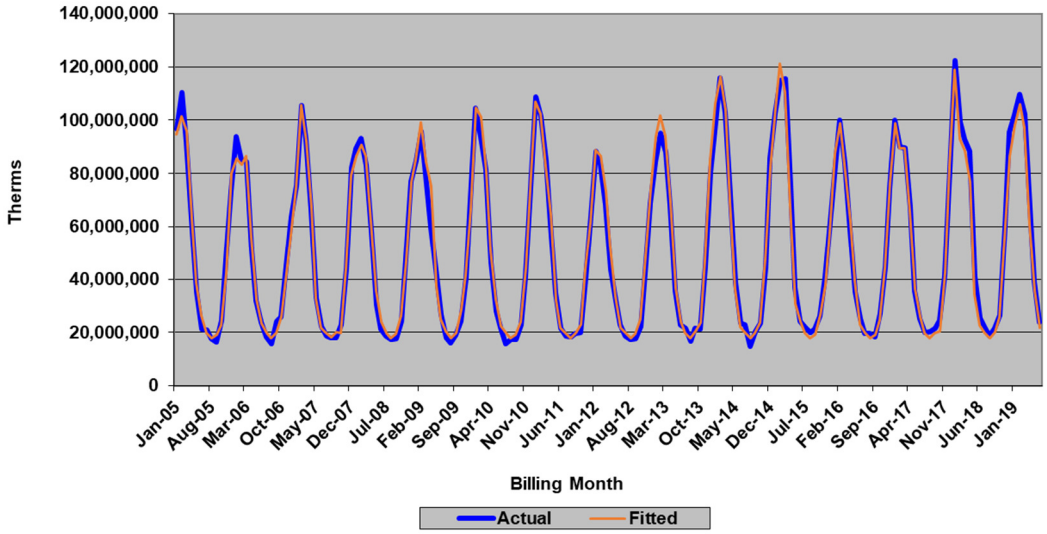


Figure 5

LVG Commercial Model
Actual vs. Fitted Values

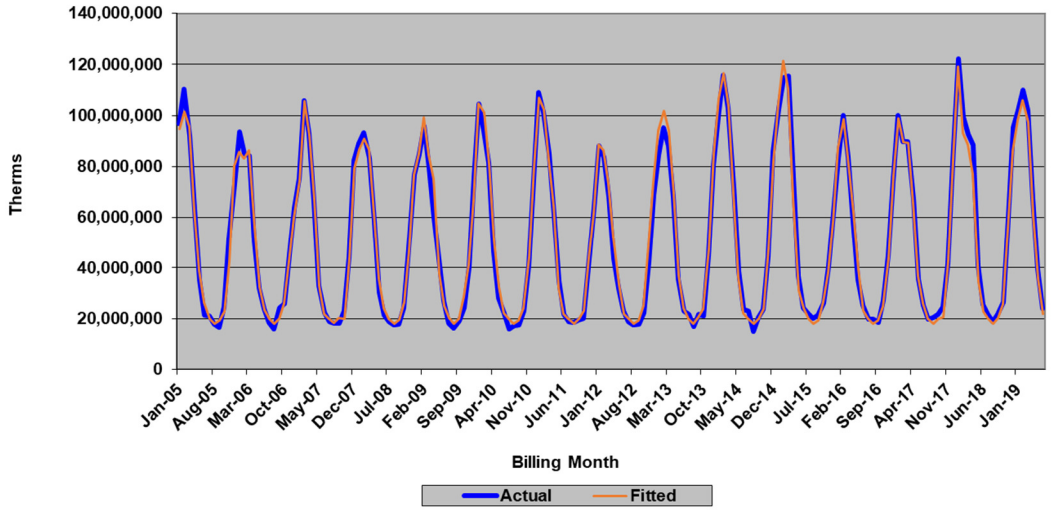


Table 2

Estimated Coefficients of the GSG Commercial Gas Sales Models
(standard errors in parentheses)

	JAN	FEB	MAR	APR	MAY	JUN	SEP	OCT	NOV	DEC	R2	DW	n
HEATING													
PRICE x HDD	-13885	-11112	-12199	-13024	-29054				-19793	-12144	0.997	1.509	102
	(2,569)	(2,825)	(3,377)	(5,238)	(17,217)				(7,123)	(4,104)			
CUST x HDD	22.74	18.08	19.18	20.20	9.48			5.96	16.00	18.11			
	(1.33)	(1.37)	(1.18)	(1.78)	(4.25)			(5.21)	(2.81)	(1.23)			
NON-HEATING													
HDD	3831	3959	3974	4027	3961	4231		874	2550	3626	0.985	1.475	102
	(76)	(78)	(93)	(149)	(371)	(1,798)		(786)	(200)	(107)			

Table 3

Estimated Coefficients of the LVG Commercial Gas Sales Models

(standard errors in parentheses)

HDD x PRICE	HDD x CUST	R2	DW	n
-7829.99	27.74	0.988	1.305	162
(1,819)	(1.3)			

Industrial

While gas sales to the commercial sector are correlated with commercial output because output tends to be correlated with commercial space-heated floor space, sales to the PSE&G rate GSG and rate LVG gas customers in the industrial sector are not correlated with the industrial output because gas, for the most part, is not used for process heat. It is used to heat employee workspaces and the number of employees has been declining while industrial output has been increasing. Therefore, rather than used the traditional function for the demand for a factor of production such as [3], the following specification is used:

THERMS = *f*(PRICEGAS, EMP, HDD) [7]

where:

EMP = Manufacturing employment.

Since gas is used primarily for space heating the economic variables need to be used as interactive variables with HDD to account for the extreme seasonality of the data. As a result, the functional forma that was estimated is:

$THERMS_t = f(HDD_t \times PRICEGAS_{a-1}, HDD_t \times EMP_{a-1}, HDD_t)$ [8]

where:

THERMS = Gas sales,
PRICEGAS = Real price of gas,
HDD = Heating degree days,
t = Billing-month,
a = Year associated with billing-month, t.

The results of the OLS estimation procedure, summarized in Figures 6-8, show that the industrial models for customers in the two space heating segments fit the historical data well. GSG Heating model is estimated for using monthly billing data from 2011 to June 2019 period while Non-Heating model is estimated for using monthly billing data from 2013 to June 2019 in order to get better estimation results. The data for industrial GSG non-heating customers, however, seems to indicate the presence of out of period adjustments in the billing data which the model doesn't, and can't be expected to, account for. These were addressed with binary variables.The larger industrial customers are served under rate LVG. The model was estimated for customers in the industrial sector using monthly billing data from 2005 to June 2019 period (excluding 2009).

Like the small and medium commercial models, the estimated coefficients of the three industrial models indicate that sensitivity to price is small. The small industrial customers, rate GSG did not show any statistically significant response to price while rate LVG sensitive to price, with an estimated elasticity of -0.06 Small response of the industrial sector to gas prices is attributed to the fact that gas, since it is not used for process heat, is a relatively small proportion of the total costs of production.

Figure 6
GSG Industrial Space Heating Model
Actual vs. Fitted Values

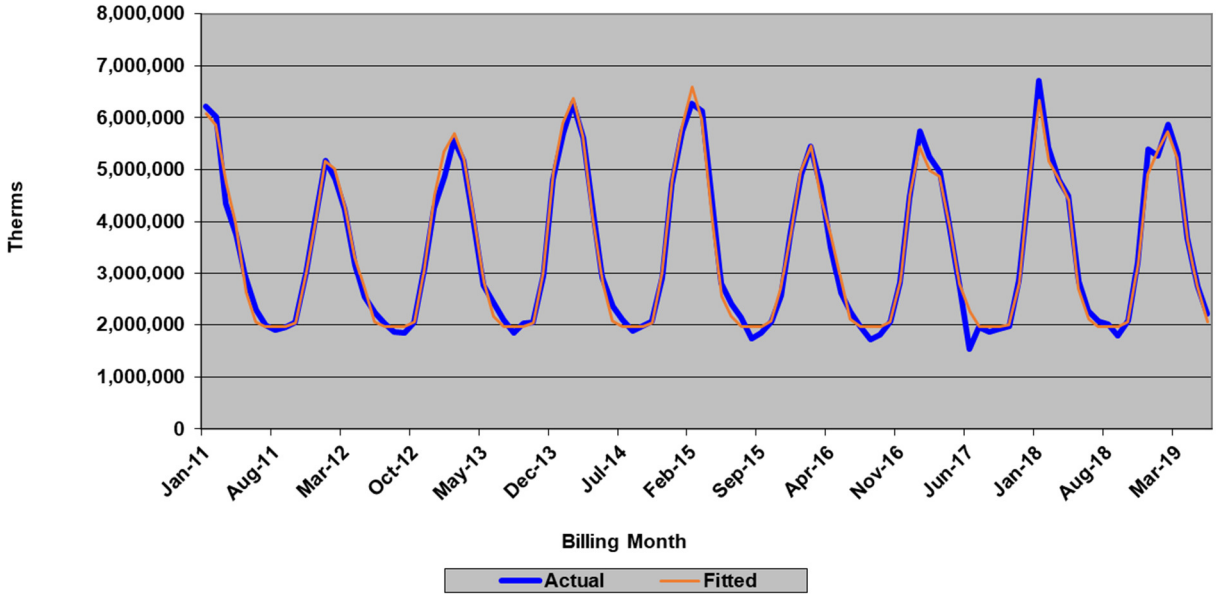


Figure 7

GSG Industrial Non-Space Heating Model

Actual vs. Fitted Values

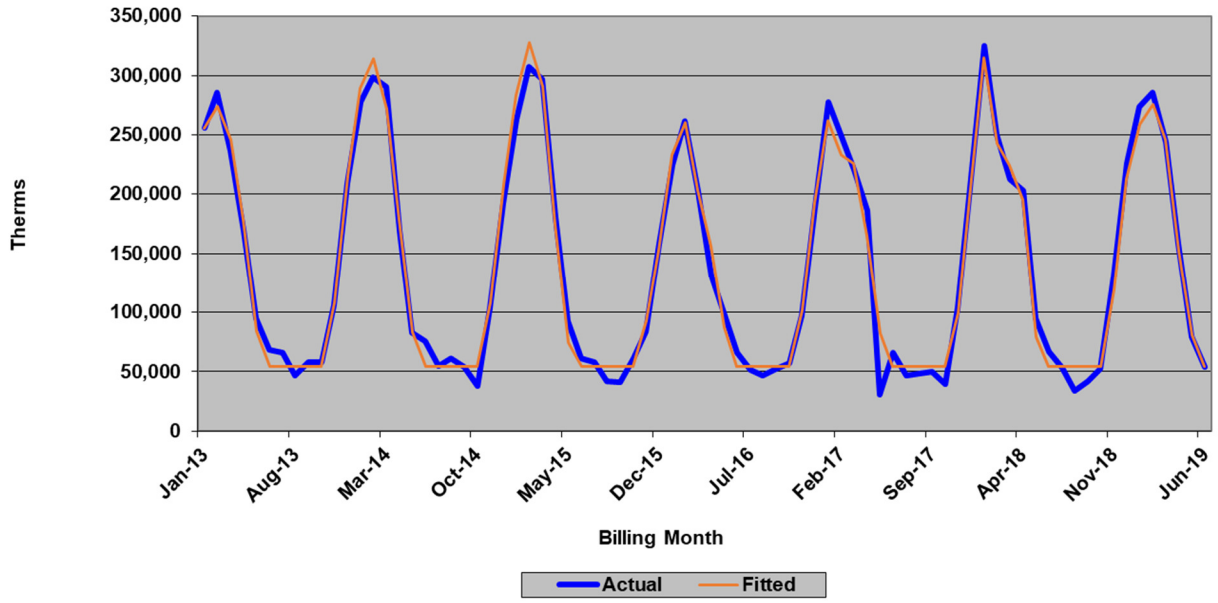


Figure 8

LVG Industrial Heating Model

Actual vs. Fitted Values

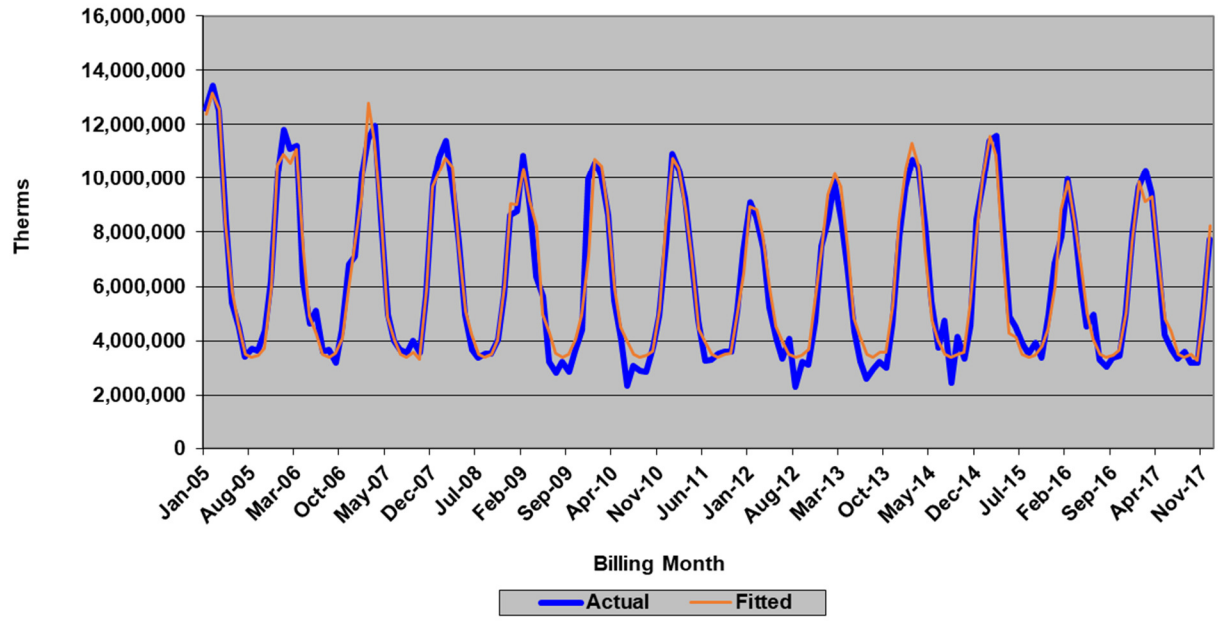


Table 4

Estimated Coefficients of the GSG Industrial Gas Sales Models

(standard errors in parentheses)

	JAN	FEB	MAR	APR	MAY	JUN	OCT	NOV	DEC	R2	DW	n
HEATING												
HDD	2588.67	1758.19	2212.78	1738.67	960.37		446.00	1165.94	2178.48	0.992	2.274	102
	(200.87)	(166.05)	(173.61)	(52.79)	(131.43)		(278.38)	(70.91)	(215.78)			
NON-HEATING												
HDD	228.74	233.63	234.77	232.64	136.33			136.30	196.12	0.982	1.993	78
	(5.70)	(5.68)	(6.65)	(10.72)	(26.79)			(15.35)	(7.82)			

Table 5

Estimated Coefficients of the LVG Industrial Gas Sales Models

(standard errors in parentheses)

HDD x PRICE	HDD x EMP	R2	DW	n
-1410.69	35.04	0.955	1.691	162
(620.33)	(3.88)			

II Forecast Assumptions

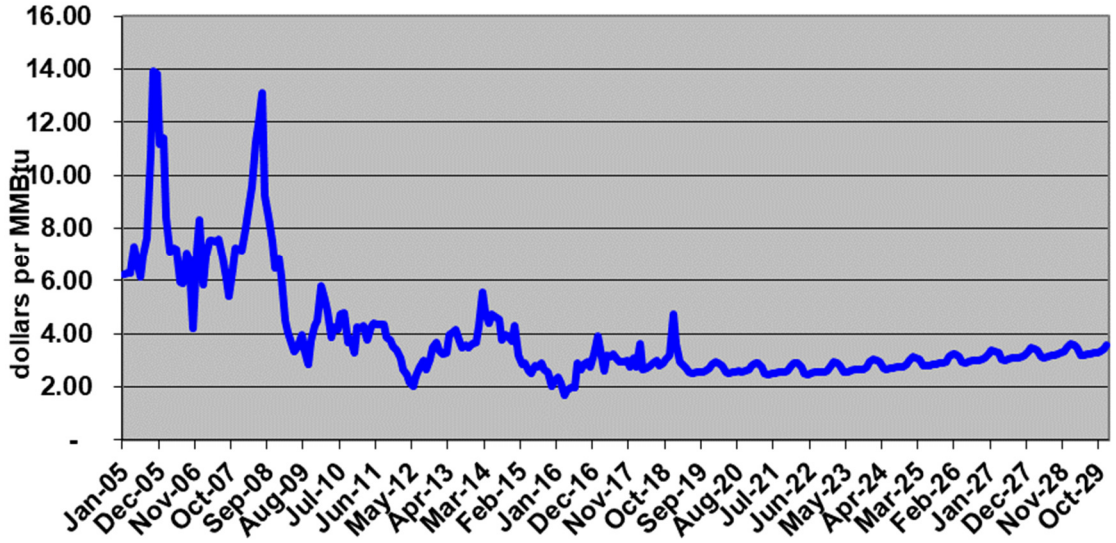
The models described above, in concert with assumptions about future prices and local economic and demographic parameters, were utilized to produce a forecast of billed natural gas delivered sales by rate for the residential, commercial, and industrial customer classes. The assumptions and the forecasts are described in more detail below.

Natural Gas Prices

The main driver of retail natural gas prices is the wholesale cost of gas which changes monthly. While these costs are passed through to commercial and industrial customers on monthly basis, the gas cost under- or over-collection of the residential customers is addressed in October where the rate is adjusted to collect or return the imbalance over the following twelve months. For the purpose of the forecast, the wholesale natural gas price was assumed to follow the NYMEX future prices as of May 06, 2019. As figure 9 shows, the wholesale price of gas is projected to stay relatively stable during the 2019-2029 periods.

Figure 9

NYMEX Natural Gas Futures Prices, May 6, 2019
($/MMBtu)



This price projection was used in the ER&T Gas cost model which generated commodity gas costs by rate. The residential costs, along with the actual imbalance in the residential gas supply cost and the revenue collection to offset this cost was utilized in the Cognos residential model to produce a stream of residential prices assuming that every October the imbalance was trued-up over

the following 12 months. These projected commodity costs, combined with delivery tariff assumptions results in projected retail prices that are summarized below.

Table 6

Historic and Projected Retail Gas Prices

(dollars per therm)

			Commercial			Industrial		
	RSG		GSG		LVG	GSG		LVG
Year	Heating	Non-Heating	Heating	Non-Heating		Heating	Non-Heating	
2006	1.39	1.58	1.41	1.30	1.23	1.43	1.33	1.22
2007	1.35	1.54	1.31	1.27	1.17	1.32	1.24	1.13
2008	1.40	1.57	1.42	1.42	1.29	1.41	1.40	1.25
2009	1.40	1.56	1.09	1.05	0.94	1.09	1.06	0.92
2010	1.24	1.43	1.10	1.07	0.97	1.11	1.06	0.92
2011	1.09	1.26	1.06	1.04	0.92	1.05	1.05	0.87
2012	1.00	1.18	0.95	0.93	0.80	0.95	0.98	0.75
2013	0.94	1.09	1.00	0.99	0.84	1.00	1.01	0.80
2014	0.80	0.94	1.06	1.04	0.91	1.10	1.08	0.90
2015	0.64	0.80	0.86	0.85	0.74	0.86	0.88	0.74
2016	0.71	0.87	0.83	0.83	0.69	0.83	0.86	0.70
2017	0.77	0.91	0.95	0.95	0.79	0.95	0.98	0.80
2018	0.74	0.88	0.93	0.92	0.79	0.94	0.96	0.77
2019	0.79	0.90	0.94	0.92	0.78	0.94	0.96	0.75
2020	0.79	0.91	0.92	0.91	0.75	0.92	0.94	0.73
2021	0.76	0.88	0.92	0.91	0.76	0.92	0.94	0.73
2022	0.74	0.86	0.83	0.82	0.67	0.83	0.85	0.64
2023	0.72	0.84	0.81	0.80	0.65	0.81	0.83	0.62
2024	0.71	0.83	0.80	0.79	0.63	0.80	0.82	0.61
2025	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2026	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2027	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2028	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2029	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2030	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2031	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2032	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2033	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2034	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60
2035	0.71	0.83	0.80	0.79	0.63	0.79	0.82	0.60

Energy Efficiency

In recent years, new technologies and state's saving programs have had significant impact on gas consumption to residential, commercial and industrial customer groups. The method of incorporating efficiency changes into the model estimation process when the changes are not driven by any of the economic explanatory variables is a two-step process.

The first step is to eliminate the impact of these programs in the historical series by adding the estimated impacts of these programs to the historical data, estimating the model, and then producing a forecast. This forecast will not have any impacts of the efficiency programs embedded in it.

The second step is to remove the impacts of the efficiency programs from both the history and the forecast. This reverts the historical data back to actual values and produces a forecast with the impacts of the efficiency programs correctly incorporated.

This methodology is used for RSG Heating, Commercial GSG Heating and LVG sales to incorporate the impacts of the current PSE&G efficiency programs and the estimated impacts of the proposed Clean Energy Future filing. These impacts are summarized in Table 7 below.

Table 7

BILLING MONTH ASUMPTIONS
(in therms)

	EMP	EE	CEF
2010	14,596,330	1,014,482	-
2011	16,831,360	1,685,403	-
2012	12,618,148	1,899,385	-
2013	16,790,499	1,912,354	-
2014	22,116,578	1,912,354	-
2015	24,589,911	1,912,354	-
2016	27,228,971	1,912,354	-
2017	29,995,086	1,912,354	-
2018	32,761,200	2,164,784	-
2019	35,527,315	2,316,230	-
2020	38,293,430	3,296,785	1,643,215
2021	41,059,544	3,451,491	7,756,646
2022	43,825,659	3,204,025	13,882,594
2023	46,591,774	2,977,359	20,909,994
2024	49,357,888	2,897,351	29,568,465
2025	52,124,003	2,897,351	39,760,945
2026	54,890,117	2,897,351	50,011,617
2027	57,656,232	2,897,351	60,262,289
2028	60,422,347	2,897,351	70,512,961
2029	63,188,461	2,795,374	80,763,633
2030	63,188,461	2,241,955	91,014,305

Economic Projections

Economic and demographic forecast assumptions for the nation and New Jersey are from Moody's Economy March 2019 forecast. This forecast assumes that, nationally, the economy continues to recover at a slow but steady rate. This national forecast is expected to be reflected in New Jersey's economic outlook that is also expected to be at a slow pace. The forecast is summarized in Table 8.

Weather during the forecast period is assumed to be "normal" as defined by the average daily weather during the twenty-year period ending December 31, 2017.

Table 8

National and New Jersey Economic Forecast Assumptions

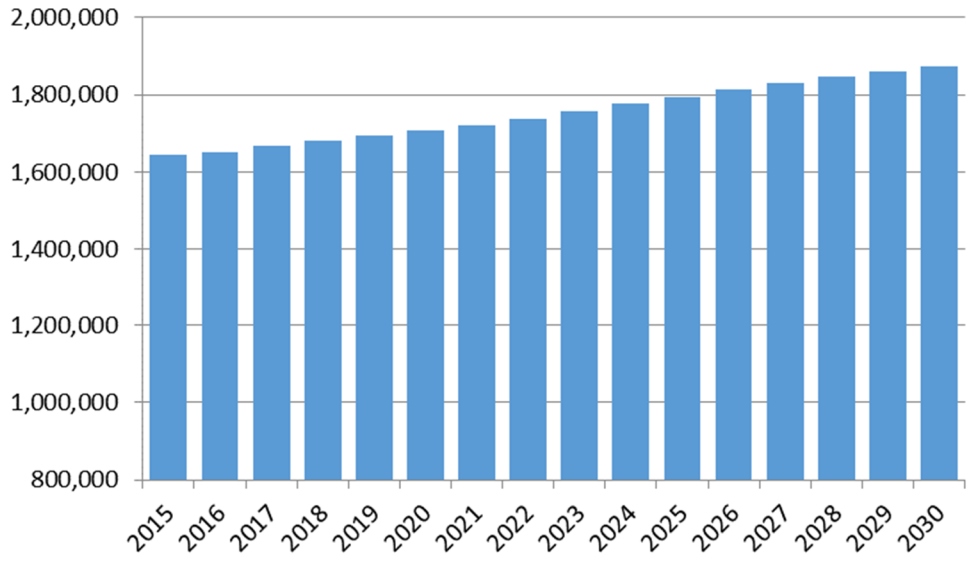
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
United States													
Gross Domestic Product, (Bil. USD, SAAR)	18,219	18,707	19,486	20,501	21,446	22,198	23,144	24,238	25,245	26,279	27,272	28,283	29,365
Industrial Production: Total, (Index 2012=100, SA)	104	102	104	108	110	112	113	115	116	118	119	121	122
Income: Personal - Total, (Bil. Ch. 2009 USD, SAAR)	15,243	15,470	15,867	16,244	16,655	17,023	17,300	17,688	18,068	18,435	18,823	19,223	19,657
Employment: Total Nonagricultural, (Mil. #, SA)	142	144	147	149	151	153	153	154	155	156	156	157	158
Household Survey: Unemployment Rate, (%, SA)	5.3	4.9	4.3	3.9	3.8	3.7	4.5	4.8	4.8	4.8	4.8	4.8	4.7
CPI: Urban Consumer - All Items, (Index 1982-84=100, SA)	237	240	245	251	255	261	267	273	279	285	292	298	305
Interest Rates: 3-Month Treasury Bills EBY, (% p.a., NSA)	0.1	0.3	0.9	2.0	2.6	3.0	3.1	2.7	2.8	3.0	3.3	3.4	3.4
Terms Conventional Mortgages: All Loans Fixed Effective Rate, (%, NSA)	4.1	3.9	4.1	4.7	5.0	5.2	5.6	6.0	6.0	6.0	6.1	6.3	6.3
New Jersey													
Real Personal Income, (Mil. 09$, SAAR)	494,898	501,737	515,554	523,498	532,526	536,235	542,204	552,986	563,055	572,737	583,273	594,271	606,014
Employment: Total Nonagricultural, (Ths., SA)	4,012	4,073	4,129	4,190	4,241	4,256	4,251	4,276	4,298	4,317	4,334	4,351	4,368
Employment: Total Manufacturing, (Ths., SA)	239	242	245	252	255	251	245	242	238	234	231	227	223
Employment: Total Non-Manufacturing, (Ths., SA)	3,773	3,831	3,884	3,938	3,986	4,005	4,006	4,034	4,060	4,082	4,103	4,124	4,144
Labor: Unemployment Rate, (%, SA)	5.8	5.0	4.6	4.3	4.1	4.4	5.4	5.7	5.7	5.7	5.6	5.6	5.5
Population: Total, (Ths.)	8,871	8,876	8,891	8,908	8,912	8,911	8,908	8,908	8,908	8,911	8,913	8,915	8,920
Households: Total, (Ths.)	3,315	3,334	3,350	3,366	3,386	3,401	3,415	3,431	3,446	3,461	3,474	3,487	3,498
Housing Starts: Single-family, (#, SAAR)	10,702	10,718	11,597	11,460	10,907	11,767	15,222	17,581	17,749	17,146	16,545	15,434	14,098

Customer Forecasts

The number of residential customers with and without natural gas space heat is based on historical trends and expected residential construction activity in the service area. Residential non-heating customers have been steadily declining at an average annual rate of 1.2 percent and this is expected to continue. Furthermore it is assumed that these customers are converting to gas heat. The number of gas heating customers is also expected to increase as new residential construction occurs. The number of gas customers is assumed to reflect the current decline seen in new single family housing construction. As a result, as the figure below shows, the number of residential customers is expected to remain relatively stable.

Figure 10

Annual Gas Residential Customers



BGSS Share

The share of delivered sales that are BGSS supplied is assumed to follow recent trends where therm shares have stabilized at their current levels across the broad range of customer classes.

III Maximum Daily Sendout Forecast

Introduction

Distribution facilities are designed to meet the estimated maximum hour demand on a day with a mean temperature of 0°F and with Newark Airport as the measuring base. Gas supplies are designed to meet the estimated maximum daily as well as maximum hourly demand. The maximum daily sendout forecast process consists of:

- Estimating the relationship between weather and firm daily sendout,
- Extrapolating that relationship to determine the current level of daily sendout at 0 degrees if no day that cold appeared in the model estimation data,
- Forecasting future maximum daily sendout levels based on the current estimated level

The remainder of this section describes each of these steps in turn.

Daily Firm Sendout Model Estimation

There are two major issues in modeling maximum firm daily sendout. First, the diversity of the customer base needs to be controlled for. Second, the model has to be designed to be extrapolated rather than interpolated. Each of these issues is discussed below.

The firm sendout number accounts for gas deliveries to a diverse set of customers ranging from residential homes to large industrial sites. Since sales to different types of customers respond to weather differently, customer mix must be controlled for in any modeling effort. In addition, the behavior of this diverse group of customers will change differently over time as prices and other economic parameters change over time. As a result, these changes also need to be accounted for. Unfortunately, the firm sendout number is not available by rate. As a result, the only way to control for changes in customer mix and changes in the behavior over time by these customers is to limit the time period of data that is used in the model estimation.

The second issue, of extrapolation, is addressed in a similar way. The relationship between sendout and weather is fairly linear. In reality, it is probably not perfectly linear. This is not an issue when estimating a model and using the results to interpolate values with the range of the estimation data. However, when extrapolating the data outside the range of the estimation data the

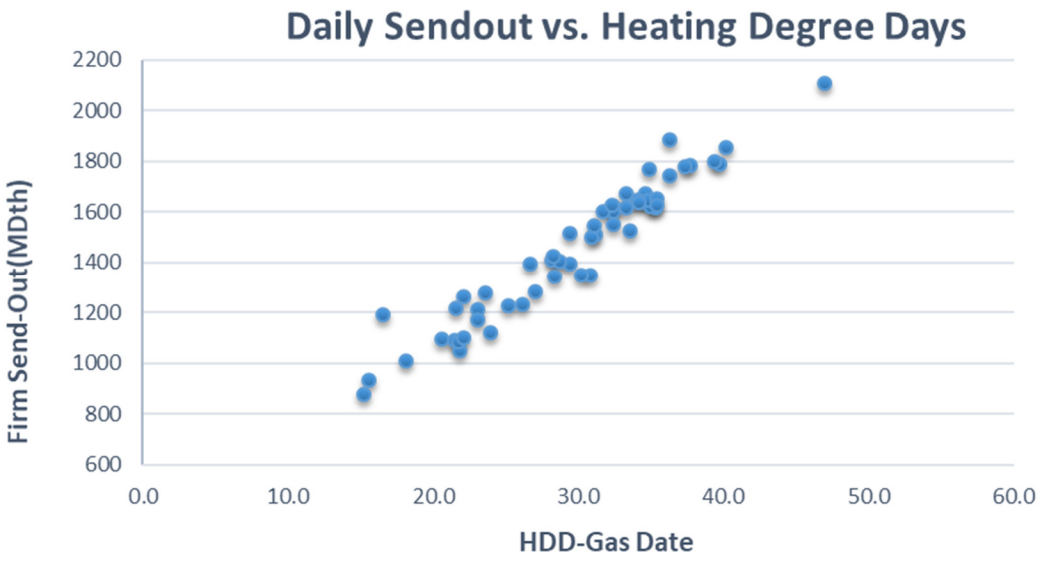
imprecision increases. The way to minimize this imprecision is to limit the observations to the lower temperature data so as to get a linear estimation of that portion of a non-linear curve that is closest to the ultimate extrapolation value.

To address both of these forecasting issues, the data used in estimating the relationship between daily sendout and weather was limited to the January and February during the most recent year available, 2019. Customer class mix will not change significantly in this short period and it contains the two coldest months when the maximum sendout would most likely occur. Analysis of the data for these two months indicates two things.

First, the data confirms the general responsiveness of firm sendout to the weather, as Figure 11 shows. Second, the relationship appears linear

Figure 11

January & February 2019



To refine the impact of the day-type on sendout, the regression model from previous years was enhanced to allow for not only an intercept change from the day-type but, also a HDD response change.

The regression model that modeled daily sendout, SENDOUT, is specified as:

$$SENDOUT_t = f(HDD_t, WEEKDAY_t, HOLIDAY_t, SNOW_t) \quad [9]$$

Where:

HDD	=	Heating degree days on gas day t,
WEEKDAY	=	Interactive variable that takes the value of HDD on weekdays, otherwise 0,
HOLIDAY	=	Interactive variable that takes the value of HDD on Sundays or Holidays, otherwise 0,
SNOW	=	Binary variable that takes the value of 1 when reported snowstorm accumulation in any portion of the service area is 6 inches or more, 0 otherwise.

The estimation results are shown in Table 8 and Figure 12 below.

Table 8

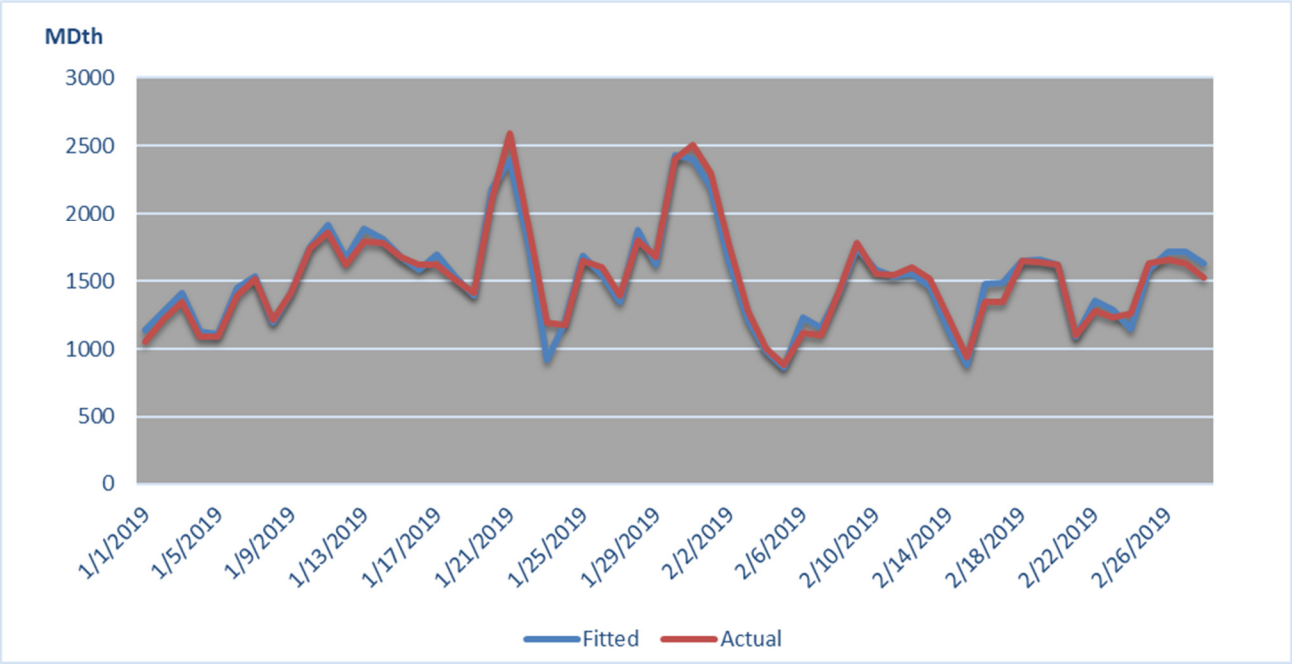
Estimated Coefficients of the Daily Sendout Model

(standard errors in parentheses)

Intercept	HDD	HOLIDAY	WEEKDAY	R2	DW	n
226.8	40.6	1.1	1.3	0.95400	1.226	59
(40.2)	(1.6)	(1.2)	(1.0)			

Figure 12

Daily Sendout Model
Actual vs. Fitted Values



The estimated coefficients of the model suggest that the estimated maximum daily peak would occur on a Monday. The model predicts that the maximum peak daily sendout would be 2,590 MDth.

A. Calendar-Month Sales Calculation

Introduction

Utilities have traditionally had a disconnection in the timing of their revenues and their costs. Revenues from retail sales are a revenue stream from meter readings and the resulting bills to their customers that occur on a daily basis throughout the month. The bills issued from meter reads in the current month's meter reading schedule are all recorded as billing-month revenue. Billing-month revenue will include revenue from electricity or gas delivered during the previous month while excluding deliveries of electricity or gas delivered during the current month that occurred after the meters were read. Expenses, on the other hand, such as wages, fuel, depreciation, etc., have been recorded on a calendar-month basis. This inconsistency in the revenue and expense streams can be tolerated if there are no major changes in the revenue and/or expense streams. If major changes are occurring, such as a rapid increase in fossil fuel prices or a high seasonality in sales, a comparison of the billing-month revenue and the calendar-month expenses can give a false view of a utility's financials. To remedy this situation, the sales and revenue accrual calculation, the estimation of calendar-month sales and revenue from billed sales and revenue and the estimation of unbilled sales and revenue was developed.

Section II will discuss how, in theory, the billed sales and the unbilled estimates are used to calculate calendar-month sales using a simple example and introduce the notation that will serve as the basis of the analysis. A description of the theory's specific application to PSE&G's meter reading schedule, that can have a single billing month encompass up to four calendar-months, follows.

Section III will describe the implementation of the estimation of the calendar-month sales and revenue process at PSE&G.

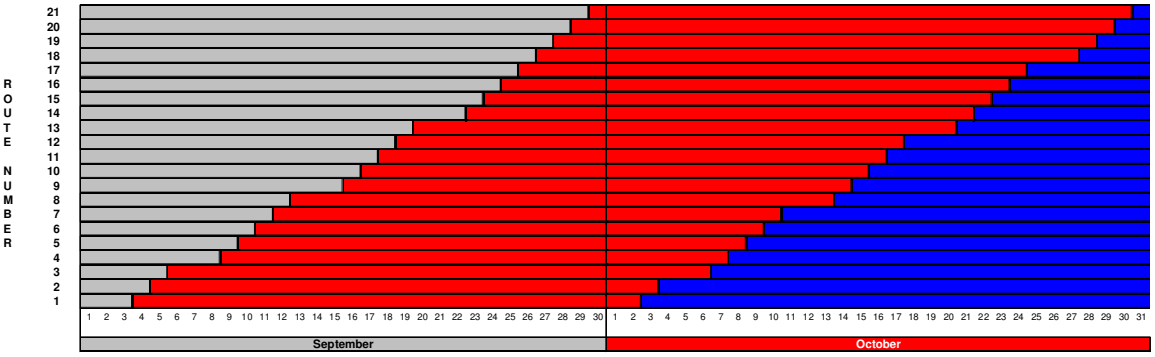
The Unbilled and Calendar-Month Estimation

A Simple Example

Utilities generally read all of their meters every month on 21 workdays. Figure 1, below shows a hypothetical October billing-month (in red) as determined by the September and October meter reading schedules. In the chart, each row represents a Route Number or a group of meters that are always read on the same day (although the day when they are all read may vary from month to month). The bottom row is red on all the days after the September read date, September 3rd until the October read date, October 2nd. If it is assumed that the customers' meters are read at noon, the October bill to these customers will reflect 28.5 days of service in September and only 1.5 days in October[2]. The second row from the bottom represents Route 2 whose customers' meters were read on September 4th and October 3rd. The October bill to these customers will reflect 27.5 days of service in September and only 2.5 days in October. This continues until the top row, Route 21, that had meter reading days of September 29th and October 30th. The October bills to these customers represent only 1.5 days of September service and 29.5 days of October service.

Figure 1

Hypothetical October 2008 Billing-Month



From the red portion of the diagram, it can be seen that the October billing-month consists of September sales that are billed in October that, to facilitate discussion, will be referred to as SEP B> OCT and October sales that are billed in October i.e., OCT B> OCT. The calendar-month sales are defined as the red and blue rectangle defined by the month of October and the 21 read-cycles. This consists of OCT B> OCT sales and the October unbilled sales, OCT B> NOV, the October sales that will be billed in November.

[2] Or, more realistically, if the meter reads for all the Route 1 customers are evenly distributed throughout an 8:00 AM to 4:00 PM workday, the reads, on average, would represent a half day's sales on the read day.

The relationship between billed, unbilled, and calendar-month sales can be derived from these identities from the steps below.

$$\text{October Calendar} = \boxed{\text{OCT B> OCT}} + \boxed{\text{OCT B> NOV}} = \boxed{\begin{matrix}\text{OCT B> OCT}\\ \text{OCT B> NOV}\end{matrix}} \qquad [1]$$

Adding and subtracting $\boxed{\text{SEP B> OCT}}$ to the r.h.s. of [1] yields:

$$\text{October Calendar} = \boxed{\begin{matrix}\text{OCT B> OCT}\\ \text{OCT B> NOV}\end{matrix}} + \boxed{\text{SEP B> OCT}} - \boxed{\text{SEP B> OCT}} \qquad [2]$$

Rearranging the r.h.s. of [2] yields:

$$\text{October Calendar} = \boxed{\begin{matrix}\text{OCT B> OCT}\\ \text{SEP B> OCT}\end{matrix}} + \boxed{\text{OCT B> NOV}} - \boxed{\text{SEP B> OCT}} \qquad [3]$$

Substituting [1] into the l.h.s. of [3] yields:

$$\boxed{\begin{matrix}\text{OCT B> OCT}\\ \text{OCT B> NOV}\end{matrix}} = \boxed{\begin{matrix}\text{OCT B> OCT}\\ \text{SEP B> OCT}\end{matrix}} + \boxed{\text{OCT B> NOV}} - \boxed{\text{SEP B> OCT}} \qquad [4]$$

This is the familiar:

$$\text{October Calendar} = \text{October Billed} + \text{October Unbilled} - \text{September Unbilled}^{3} \qquad [5]$$

This formula for the accrual of calendar-month sales and revenues is preferred to any direct estimation of calendar-month sales because any error in the unbilled estimate is
"reversed out" in the following month. The advantage of this is that, as the calendar time period extends, the potential error resulting from unbilled estimates is reduced. This can be seen by summing up [5] over the 2008 calendar-year as:

$$\text{Calendar-Year 2008} = \sum_{i=\text{JAN08}}^{\text{DEC08}} \text{Billed}_i + \sum_{i=\text{JAN08}}^{\text{DEC08}} \text{Unbilled}_i - \sum_{i=\text{DEC07}}^{\text{NOV08}} \text{Unbilled}_i \qquad [6]$$

[3] The difference between the current month's unbilled and the previous month's is often referred to as
the "net unbilled".

Where:

$Billed_i$ = Billing-month sales in month i,
$Unbilled_i$ = Unbilled sales in month i.

That simplifies to:

$$\text{Calendar-Year 2008} = \sum_{i=JAN08}^{DEC08} Billed_i + Unbilled_{DEC08} - Unbilled_{DEC07} \qquad [7]$$

The key result from [7] is that the annual calendar-year sales are the annual billed sales, a very large real number, and the difference between two monthly unbilled estimates. Since the error that can be expected in the difference between the two monthly unbilled estimates can be assumed to be quite small compared to the annual billed total, the calendar-year estimate, as a result, can be expected to be very accurate.

The same general results described in this simple example apply to PSE&G's more complicated meter reading schedule that is described below.

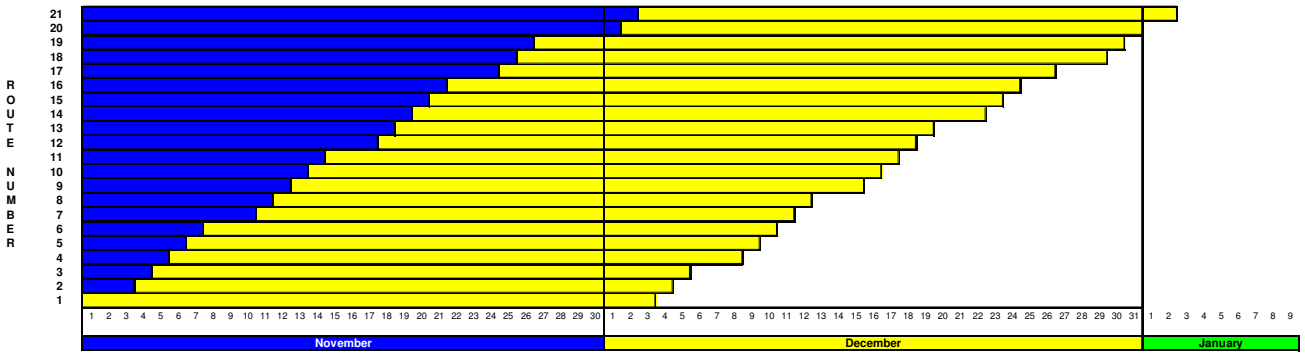
A More General Example

Unlike the hypothetical October billing-month, discussed above, that spanned two months, September and October, the PSE&G billing-month can encompass as many as four months. For example, the December 2008 PSE&G billing month, illustrated in Figure 2. has meter reading dates ranging from October 31st to January 2nd. As a result, it spans four months, October, November, December, and January[4].

[4] This is the original PSE&G December 2008 meter reading schedule. It has since been "compressed" to accommodate the implementation of iPower, the new billing and customer information system.

Figure 2

PSE&G December 2008 Billing-Month



Therefore, to develop a general algorithm applicable to PSE&G, the definition of billed, unbilled, and calendar sales must be expanded to include the potential of having sales from two additional calendar months reflected in a billing-month. December 2008 billing month, for example, is defined as:

$$\text{December Billed} = \boxed{\begin{array}{l}\text{OCT B> DEC}\\ \text{NOV B> DEC}\\ \text{DEC B> DEC}\\ \text{JAN B> DEC}\end{array}} \qquad [8]$$

Given the additional components of the billed, $\boxed{\text{OCT B> DEC}}$, i.e. the "under billed" sales, and $\boxed{\text{JAN B> DEC}}$, the "excess billed" sales, the addition of the current unbilled and subtraction of the previous month's unbilled to the December billed, as defined in the simple example above, will overstate December calendar-month sales by the sum of under billed and excess billed sales. As a result, the December unbilled needs to be redefined as:

$$\text{December Unbilled} = \boxed{\begin{array}{l}\text{DEC B> JAN}\\ \text{DEC B> FEB}\end{array}} + \boxed{\text{NOV B> JAN}} - \boxed{\text{JAN B> DEC}} \qquad [9]$$

$$\text{December Unbilled} = \text{December Unbilled} + \text{January Underbilled} - \text{December Excess Billed} \qquad [10]$$

December calendar can then be defined as December billed plus the new

December unbilled less the equivalent November unbilled or:

DEC B> OCT DEC B> NOV DEC B> DEC DEC B> JAN	=	OCT B> DEC NOV B> DEC DEC B> DEC JAN B> DEC						
	+	DEC B> JAN DEC B> FEB	+	NOV B> JAN	-	JAN B> DEC		
	-	NOV B> DEC NOV B> JAN	-	OCT B> DEC	+	DEC B> NOV		[11]

or, in words:

December Calendar	= December Billed + December Unbilled - November Unbilled	[12]

This is the general formula that is used to calculate unbilled sales at PSE&G.

The PSE&G Gas Calendar-Month Estimation

The estimation of calendar-month gas sales at PSE&G is based on the notion that gas sales can be divided into two components: a weather sensitive component and a non-weather sensitive component. The weather sensitive component is affected by the winter weather as measured by heating degree days (HDD). The non-weather component is simply a function of the number of days in the sales period. As a result, sales during the unbilled periods can be estimated based on the HDD and number of days during the unbilled periods and the estimates of the weather-sensitive sales per HDD and non-weather sensitive sales per day.

The estimate of the weather-sensitive sales per HDD for each rate, the HDD coefficient, is the sum of the coefficients associated with its model's independent variables that have a HDD component divided by the number of days in the billing period. In the case of RSG that, unlike the other rates, is modeled on a use per customer basis, this result is multiplied by the number of customers.

The estimate of the non-weather sensitive sales per day for each rate, the base coefficient, is the value of the model equation with all of the coefficients associated with HDD set to zero and divided by the number of days in the billing period. As in the case of the HDD coefficient, the RSG result is multiplied by the number of customers.

Given the structure of the models, these coefficients will vary by month and by year. The current estimates for 2008 and 2009 are shown in Table 1 below.[5]

Table 1

Unbilled Weather and Base Coefficients, 2008-2009

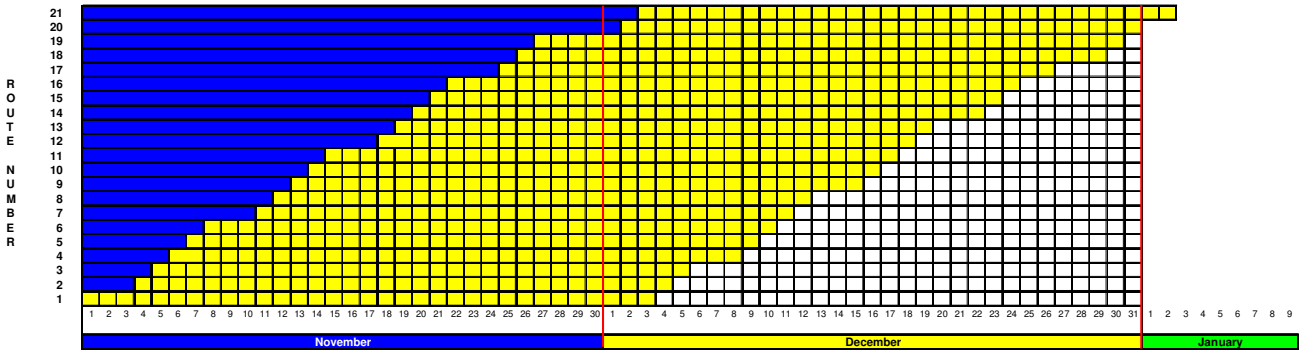
	RSG				GSG-Commercial				GSG-Industrial				LVG - Non Vehicle			
Billing	Heating		Non-heating		Heating		Non-heating		Heating		Non-heating		Commercial		Industrial	
Month	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD
Jan-08	1,477,624	246,082	218,393	4,689	56,941	45,607	168,133	3,942	(15,873)	3,333	2,978	501	1,047,971	79,608	145,023	8,767
Feb-08	1,554,914	253,674	234,372	4,811	69,746	45,607	175,674	3,942	(15,256)	3,333	3,786	501	1,172,070	79,608	167,056	8,767
Mar-08	1,343,904	249,936	236,373	4,737	25,553	45,607	158,654	3,942	(16,832)	3,333	2,893	501	1,053,237	79,608	138,433	8,767
Apr-08	1,337,980	248,305	190,526	4,692	13,895	45,607	150,129	3,942	(15,769)	3,333	5,681	501	1,076,058	79,608	159,387	8,767
May-08	1,267,108	251,443	164,912	4,741	146,976	45,607	117,463	3,942	332	3,333	4,166	501	838,647	79,608	137,277	8,767
Jun-08	1,086,639	250,233	135,407	4,714	126,187	45,607	95,849	3,942	2,561	3,333	3,704	501	708,324	79,608	129,981	8,767
Jul-08	984,641	248,954	116,905	4,704	135,270	45,607	94,660	3,942	3,907	3,333	2,680	501	610,707	79,608	119,171	8,767
Aug-08	912,999	249,456	104,709	4,666	103,926	45,607	80,601	3,942	2,045	3,333	2,578	501	613,535	79,608	119,770	8,767
Sep-08	940,487	252,748	111,693	4,746	108,515	45,607	84,252	3,942	2,953	3,333	2,730	501	581,470	79,608	129,852	8,767
Oct-08	809,244	249,439	113,383	4,671	115,541	45,607	90,002	3,942	3,184	3,333	1,932	501	728,815	79,608	116,580	8,767
Nov-08	1,076,293	250,792	138,927	4,687	(9,962)	45,607	107,114	3,942	(7,929)	3,333	5,262	501	769,823	79,608	112,495	8,767
Dec-08	1,191,333	252,604	187,367	4,690	(9,608)	45,607	130,211	3,942	(18,805)	3,333	2,214	501	902,036	79,608	120,543	8,767
Jan-09	1,481,212	248,163	214,955	4,643	56,601	45,745	153,926	3,711	(15,827)	3,259	2,952	490	1,041,705	79,850	144,156	8,190
Feb-09	1,548,542	252,236	228,920	4,692	69,856	45,745	171,980	3,711	(15,254)	3,259	3,796	490	1,173,921	79,850	167,320	8,190
Mar-09	1,393,454	253,517	239,084	4,687	26,121	45,745	168,175	3,711	(17,054)	3,259	2,980	490	1,076,642	79,850	141,509	8,190
Apr-09	1,331,091	250,149	185,138	4,617	13,721	45,745	148,255	3,711	(15,497)	3,259	5,622	490	1,062,628	79,850	157,398	8,190
May-09	1,266,433	253,309	160,992	4,665	145,815	45,745	116,535	3,711	352	3,259	4,136	490	832,022	79,850	136,193	8,190
Jun-09	1,094,707	252,091	133,240	4,638	126,187	45,745	95,849	3,711	2,565	3,259	3,704	490	708,324	79,850	129,981	8,190
Jul-09	987,359	250,802	114,502	4,629	134,644	45,745	94,222	3,711	3,889	3,259	2,668	490	607,880	79,850	118,620	8,190
Aug-09	925,740	251,308	103,701	4,591	104,600	45,745	81,124	3,711	2,058	3,259	2,595	490	617,512	79,850	120,546	8,190
Sep-09	953,382	254,625	110,592	4,670	109,193	45,745	84,778	3,711	2,971	3,259	2,747	490	585,098	79,850	130,662	8,190
Oct-09	808,699	251,291	110,672	4,596	114,612	45,745	89,279	3,711	3,169	3,259	1,918	490	722,957	79,850	115,643	8,190
Nov-09	1,077,388	252,654	135,835	4,612	(9,899)	45,745	106,433	3,711	(7,834)	3,259	5,235	490	764,927	79,850	111,779	8,190
Dec-09	1,203,734	254,479	184,915	4,615	(9,637)	45,745	130,597	3,711	(18,750)	3,259	2,238	490	904,708	79,850	120,900	8,190

[5] While the coefficient is called the "base" coefficient, it really does not measure base use per day. Rather it is the intercept term in a simple regression. As a result, it can be negative reflecting the intercept of a regression that is outside of the relevant range.

The billed, unbilled, excess billed, and underbilled days and heating degree days are derived from the meter reading schedule and daily weather data. The measure used is the Average Route Days (ARD). The ARD are defined as the number of days across all routes for a given period divided by 21, the total number of routes. This concept is illustrated in Figure 3, a slightly different version of the December 2008 billing-month, shown below.

Figure 3

PSE&G December 2008 Billing-Month



Each square represents an ARD.[6] The total yellow blocks in each row represent the number of days in that particular route during the December billing-month. The sum of all the yellow blocks, 677, divided by 21 represent the average number of days in the December billing-month, i.e., the average number of days across the 21 routes or 32.24.

The number of excess billed days, JAN B> DEC , is:

1.5 (January 1st and half of January 2nd) / 21 = 0.07 [13]

HDD for each period are a weighted sum of the daily HDD where the weight is the ARD associated with that day. For example, from the diagram it can be seen that on December 21st, the sales to 8 routes, routes 14-21, will be in the

[6] Well, not exactly. Remember that it is assumed that the meters are read at noon. As a result the last yellow block to the right of each row counts as a half day. On the other hand, the last blue block on the right of each row also counts as a half day in the December billing-month so, the math works for the billing-month but, the half needs to be taken into account when discussing portions of the unbilled and billed periods. For a clearer discussion, however, the half days will be, for the most part, ignored.

December billing-month while sales to the first thirteen routes will be in the January billing-month. As a result , 8/21 or 38 percent of the HDD on December 20th will be assigned to the December billing month and 62 percent will be assigned to the January billing month.

HDD for underbilled and excess billed periods are assigned in a similar manner.

From Table 2 below that shows the normal monthly billed an unbilled HDD and days by type, it can be seen that underbilled days and HDD occur rarely while excess billed days are quite common.

Table 2

Billed and Unbilled Days and Weather 2008-2009

Billing Month	Heating Degree Days				Days			
	Billed	Unbilled	Excess Billed	Under Billed	Billed	Unbilled	Excess Billed	Under Billed
Jan-08	795.06	322.08	0.59	-	31.67	12.76	0.02	0.00
Feb-08	786.44	283.76	5.90	-	30.19	11.83	0.29	0.00
Mar-08	643.82	187.74	2.62	-	30.67	12.10	0.21	0.00
Apr-08	360.41	73.05	0.20	-	30.14	11.83	0.10	0.00
May-08	108.21	13.78	0.05	-	29.90	13.05	0.21	0.00
Jun-08	15.47	0.14	-	-	30.33	12.60	0.10	0.00
Jul-08	0.14	-	-	-	30.71	12.81	0.02	0.00
Aug-08	0.01	0.03	-	-	29.57	14.29	0.07	0.00
Sep-08	1.87	7.02	0.04	-	30.71	13.52	0.02	0.00
Oct-08	60.34	87.80	-	-	29.38	15.12	0.00	0.00
Nov-08	255.88	213.78	1.65	-	29.76	15.43	0.10	0.00
Dec-08	578.34	338.40	1.75	0.17	32.24	14.19	0.07	0.02
Jan-09	797.36	361.02	1.75	-	31.86	13.33	0.07	0.00
Feb-09	786.19	277.80	7.41	-	30.14	11.48	0.36	0.00
Mar-09	634.56	188.08	1.17	-	30.00	12.21	0.10	0.00
Apr-09	361.92	73.58	0.46	-	30.52	11.79	0.19	0.00
May-09	108.91	13.36	0.05	-	30.14	12.67	0.21	0.00
Jun-09	15.07	0.12	-	-	30.33	12.21	0.10	0.00
Jul-09	0.12	-	-	-	30.86	12.38	0.12	0.00
Aug-09	0.01	0.03	-	-	29.38	13.90	0.02	0.00
Sep-09	1.97	6.92	0.04	-	30.52	13.38	0.02	0.00
Oct-09	61.71	86.34	-	-	29.62	14.74	0.00	0.00
Nov-09	261.34	207.03	1.65	-	29.95	14.88	0.10	0.00
Dec-09	582.57	329.38	3.90	-	32.14	13.81	0.17	0.00

On a monthly basis, the necessary coefficient, weather, and day data are transmitted to PSE&G accounting services each month. They are used to calculate the actual current month unbilled sales, UnbilledTherms, using:

$$UnbilledTherms = UnbilledDays \times BASECoef + UnbilledHDD \times HDDCoef \quad [14]$$

Where:

UnbilledDays = the number of route days in the unbilled period as defined by [9],

Unbilled HDD = the number of HDD in the unbilled period as defined by [9],

BASECoef = the Base coefficient,

HDDCoef = the HDD coefficient.

The results of this calculation, with the previous month's unbilled results, are used to calculate calendar-month sales.

Unbilled, and as a consequence, calendar-month revenue is calculated by pricing the unbilled therms at the projected tariff rates. Adding the net unbilled revenue to the billing-month revenues results in the estimate of calendar-month revenue.

B. Summary Tables

Delivered Gas Sales As Billed
2017-2027
(MDth)

Class	Rate	Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	RSG	Heating	130,512	147,879	142,604	144,782	146,653	148,260	150,800	152,878	155,415	157,746	160,076
		Non-Heating	8,860	9,314	4,825	4,770	4,749	4,755	4,777	4,782	4,769	4,738	4,708
	Total		139,371	157,193	147,430	149,552	151,401	153,015	155,578	157,660	160,184	162,484	164,784
Commercial	GSG	Heating	22,541	25,864	23,151	23,619	23,924	23,752	24,244	24,142	24,004	23,802	23,555
		Non-Heating	3,939	4,315	4,120	4,151	4,154	4,148	4,148	4,148	4,150	4,148	4,147
		Total	26,480	30,179	27,272	27,770	28,077	27,901	28,393	28,290	28,153	27,949	27,702
	LVG		61,091	70,527	66,840	67,743	68,091	68,027	68,465	68,451	68,558	68,524	68,485
	TSG	Firm	941	1,193	1,152	1,152	1,145	1,118	1,083	1,021	939	857	775
		Non-Firm	10,062	14,028	15,072	15,072	15,067	15,043	15,013	14,943	14,850	14,756	14,663
		Total	11,003	15,221	16,224	16,224	16,213	16,161	16,096	15,964	15,789	15,613	15,437
	CIG		3,595	5,471	4,504	4,504	4,504	4,504	4,504	4,504	4,504	4,504	4,504
	CSG		16,341	21,300	12,816	12,816	12,816	12,816	12,816	12,816	12,816	12,816	12,816
	Total		118,510	142,697	127,656	129,058	129,701	129,409	130,274	130,025	129,821	129,407	128,944
Industrial	GSG	Heating	871	1,019	935	946	948	946	947	946	947	948	948
		Non-Heating	153	169	161	162	162	162	162	162	162	162	162
		Total	1,025	1,188	1,096	1,108	1,110	1,108	1,109	1,108	1,109	1,109	1,110
	LVG		7,043	8,383	8,234	8,254	8,198	8,141	8,150	8,097	8,059	8,008	7,963
	TSG	Firm	1,511	1,528	1,397	1,397	1,397	1,397	1,397	1,397	1,397	1,397	1,397
		Non-Firm	17,374	6,115	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077
		Total	18,886	7,643	7,474	7,474	7,474	7,474	7,474	7,474	7,474	7,474	7,474
	CIG		564	1,020	771	771	771	771	771	771	771	771	771
	CSG		83,737	106,647	129,704	129,704	129,704	129,704	129,704	129,704	129,704	129,704	129,704
	Contract		8,822	-	-	-	-	-	-	-	-	-	-
	Total		120,075	124,880	147,280	147,312	147,258	147,198	147,209	147,154	147,117	147,067	147,023
Lighting	SLG		66	76	66	66	66	66	66	66	66	66	66
Total			378,023	424,847	422,431	425,988	428,425	429,688	433,126	434,904	437,188	439,024	440,816

Supplied Gas Sales As Billed
2017-2027
(MDth)

Class	Rate	Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	RSG	Heating	124,075	141,470	137,731	139,836	141,639	143,189	145,639	147,645	150,092	152,339	154,583
		Non-Heating	8,362	8,844	4,585	4,532	4,512	4,518	4,540	4,544	4,532	4,502	4,474
	Total		132,437	150,315	142,316	144,369	146,151	147,707	150,179	152,190	154,624	156,841	159,058
Commercial	GSG	Heating	17,387	19,929	18,910	18,489	18,731	18,600	18,991	18,918	18,816	18,664	18,478
		Non-Heating	2,965	3,158	3,057	3,079	3,081	3,077	3,077	3,077	3,078	3,077	3,076
		Total	20,352	23,087	21,967	21,568	21,812	21,677	22,068	21,995	21,895	21,741	21,554
	LVG		24,578	26,300	26,638	25,180	25,318	25,293	25,470	25,476	25,523	25,520	25,514
	TSG	Firm	-	-	-	-	-	-	-	-	-	-	-
		Non-Firm	942	807	812	812	812	812	812	812	812	812	812
		Total	942	807	812	812	812	812	812	812	812	812	812
	CIG		3,595	5,471	4,504	4,504	4,504	4,504	4,504	4,504	4,504	4,504	4,504
	CSG		-	-	-	-	-	-	-	-	-	-	-
	Total		49,467	55,664	53,921	52,064	52,445	52,286	52,854	52,787	52,733	52,576	52,383
Industrial	GSG	Heating	689	799	767	776	778	776	777	776	777	777	778
		Non-Heating	113	127	126	127	127	127	127	127	127	127	127
		Total	802	927	893	903	905	903	904	903	904	904	904
	LVG		1,864	2,108	2,160	2,162	2,144	2,126	2,128	2,113	2,101	2,085	2,071
	TSG	Firm	-	-	-	-	-	-	-	-	-	-	-
		Non-Firm	108	109	63	63	63	63	63	63	63	63	63
		Total	108	109	63	63	63	63	63	63	63	63	63
	CIG		564	1,020	771	771	771	771	771	771	771	771	771
	CSG		-	-	-	-	-	-	-	-	-	-	-
	Contract		1,301	-	-	-	-	-	-	-	-	-	-
	Total		4,638	4,164	3,887	3,899	3,883	3,863	3,866	3,850	3,839	3,823	3,810
Lighting	SLG		26	26	26	25	25	25	25	25	25	25	25
Total			186,568	210,170	200,150	200,357	202,504	203,881	206,924	208,852	211,222	213,266	215,276

Supplied Share of Delivered Gas Sales As Billed
2017-2027
(percent)

Class	Rate	Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	RSG	Heating	95%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%
		Non-Heating	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	Total		95%	96%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Commercial	GSG	Heating	77%	77%	82%	78%	78%	78%	78%	78%	78%	78%	78%
		Non-Heating	75%	73%	74%	74%	74%	74%	74%	74%	74%	74%	74%
		Total	77%	76%	81%	78%	78%	78%	78%	78%	78%	78%	78%
	LVG		40%	37%	40%	37%	37%	37%	37%	37%	37%	37%	37%
	TSG	Firm	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Non-Firm	9%	6%	5%	5%	5%	5%	5%	5%	5%	5%	6%
		Total	9%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	CIG		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	CSG		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Total		42%	39%	42%	40%	40%	40%	41%	41%	41%	41%	41%
Industrial	GSG	Heating	79%	78%	82%	82%	82%	82%	82%	82%	82%	82%	82%
		Non-Heating	74%	75%	78%	78%	78%	78%	78%	78%	78%	78%	78%
		Total	78%	78%	81%	81%	81%	81%	81%	81%	81%	81%	81%
	LVG		26%	25%	26%	26%	26%	26%	26%	26%	26%	26%	26%
	TSG	Firm	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Non-Firm	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%	1%
		Total	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
	CIG		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	CSG		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Contract		15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Total		4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Lighting	SLG		39%	35%	39%	39%	39%	39%	39%	39%	39%	39%	39%
Total			49%	49%	47%	47%	47%	47%	48%	48%	48%	49%	49%

Delivered Gas Sales Calendar-Year
2017-2027
(MDth)

Class	Rate	Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	RSG	Heating	131,801	144,199	143,157	145,334	146,357	148,191	150,591	153,611	155,202	157,517	159,750
		Non-Heating	8,866	9,044	4,717	4,782	4,731	4,751	4,768	4,802	4,756	4,723	4,690
	Total		140,667	153,243	147,874	150,116	151,089	152,942	155,358	158,413	159,959	162,240	164,441
Commercial	GSG	Heating	22,771	25,196	24,369	23,708	23,865	23,718	24,216	24,249	23,940	23,733	23,473
		Non-Heating	4,040	4,256	4,147	4,163	4,143	4,144	4,140	4,159	4,142	4,139	4,136
		Total	26,811	29,453	28,516	27,870	28,008	27,862	28,356	28,409	28,081	27,872	27,609
	LVG		61,513	68,128	67,469	67,964	67,924	67,951	68,345	68,688	68,414	68,373	68,297
	TSG	Firm	951	1,197	1,122	1,152	1,145	1,118	1,083	1,021	939	857	775
		Non-Firm	9,668	10,972	15,072	15,072	15,067	15,043	15,013	14,943	14,850	14,756	14,663
		Total	10,618	12,169	16,195	16,224	16,213	16,161	16,096	15,964	15,789	15,613	15,437
	CIG		3,408	3,568	4,520	4,504	4,504	4,504	4,504	4,504	4,504	4,504	4,504
	CSG		8,734	18,277	13,267	12,816	12,816	12,816	12,816	12,816	12,816	12,816	12,816
	Total		111,084	131,594	129,966	129,379	129,464	129,294	130,117	130,380	129,604	129,178	128,664
Industrial	GSG	Heating	875	993	947	950	945	944	944	950	945	945	945
		Non-Heating	155	166	162	162	162	161	161	162	161	161	161
		Total	1,030	1,159	1,109	1,112	1,107	1,106	1,106	1,112	1,106	1,106	1,106
	LVG		7,093	8,258	8,331	8,271	8,175	8,130	8,137	8,114	8,042	7,991	7,943
	TSG	Firm	1,574	1,453	1,507	1,397	1,397	1,397	1,397	1,397	1,397	1,397	1,397
		Non-Firm	15,878	5,486	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077	6,077
		Total	17,451	6,939	7,584	7,474	7,474	7,474	7,474	7,474	7,474	7,474	7,474
	CIG		557	657	801	771	771	771	771	771	771	771	771
	CSG		72,331	86,007	130,376	129,704	129,704	129,704	129,704	129,704	129,704	129,704	129,704
	Contract		6,389	-	-	-	-	-	-	-	-	-	-
	Total		104,851	103,020	148,202	147,332	147,231	147,185	147,192	147,176	147,097	147,047	146,999
Lighting	SLG		66	72	67	66	66	66	66	66	66	66	66
Total			356,668	387,928	426,110	426,892	427,850	429,487	432,733	436,034	436,726	438,531	440,169

Supplied Gas Sales Calendar-Year
2017-2027
(MDth)

Class	Rate	Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	RSG	Heating	125,315	137,603	138,272	140,367	141,355	143,123	145,437	148,350	149,888	152,119	154,270
		Non-Heating	8,365	8,561	4,481	4,543	4,496	4,514	4,530	4,563	4,520	4,488	4,457
	Total		133,680	146,164	142,753	144,911	145,850	147,637	149,968	152,913	154,407	156,607	158,728
Commercial	GSG	Heating	17,569	19,242	19,102	18,558	18,685	18,573	18,969	19,002	18,766	18,611	18,414
		Non-Heating	2,976	3,083	3,079	3,088	3,073	3,074	3,071	3,085	3,072	3,070	3,068
		Total	20,545	22,325	22,181	21,646	21,758	21,647	22,040	22,087	21,839	21,681	21,482
	LVG		24,708	25,405	26,659	25,263	25,255	25,265	25,424	25,565	25,468	25,462	25,443
	TSG	Firm	-	-	-	-	-	-	-	-	-	-	-
		Non-Firm	892	699	812	812	812	812	812	812	812	812	812
		Total	892	699	812	812	812	812	812	812	812	812	812
	CIG		3,408	3,568	4,520	4,504	4,504	4,504	4,504	4,504	4,504	4,504	4,504
	CSG		-	-	-	-	-	-	-	-	-	-	-
	Total		49,553	51,997	54,172	52,225	52,328	52,228	52,780	52,968	52,623	52,459	52,241
Industrial	GSG	Heating	692	785	777	779	775	775	775	779	775	775	775
		Non-Heating	115	124	127	127	127	127	127	127	127	127	126
		Total	806	909	904	906	902	901	901	906	901	902	901
	LVG		1,877	2,082	2,200	2,167	2,137	2,122	2,124	2,119	2,095	2,080	2,065
	TSG	Firm	-	-	-	-	-	-	-	-	-	-	-
		Non-Firm	59	82	63	63	63	63	63	63	63	63	63
		Total	59	82	63	63	63	63	63	63	63	63	63
	CIG		557	657	801	771	771	771	771	771	771	771	771
	CSG		-	-	-	-	-	-	-	-	-	-	-
	Contract		805	-	-	-	-	-	-	-	-	-	-
	Total		4,104	3,731	3,968	3,907	3,873	3,858	3,860	3,859	3,831	3,815	3,801
Lighting	SLG		26	26	26	25	25	25	25	25	25	25	25
Total			187,362	201,918	200,919	201,068	202,077	203,747	206,633	209,766	210,887	212,907	214,794

Supplied Share of Delivered Gas Sales Calendar Year 2017-2027 (percent)

Class	Rate	Category	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Residential	RSG	Heating	95%	95%	97%	97%	97%	97%	97%	97%	97%	97%	97%
		Non-Heating	94%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%
	Total		95%	95%	97%	97%	97%	97%	97%	97%	97%	97%	97%
Commercial	GSG	Heating	77%	76%	78%	78%	78%	78%	78%	78%	78%	78%	78%
		Non-Heating	74%	72%	74%	74%	74%	74%	74%	74%	74%	74%	74%
		Total	77%	76%	78%	78%	78%	78%	78%	78%	78%	78%	78%
	LVG		40%	37%	40%	37%	37%	37%	37%	37%	37%	37%	37%
	TSG	Firm	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Non-Firm	9%	6%	5%	5%	5%	5%	5%	5%	5%	5%	6%
		Total	8%	6%	5%	5%	5%	5%	5%	5%	5%	5%	5%
	CIG		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	CSG		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Total		45%	40%	42%	40%	40%	40%	41%	41%	41%	41%	41%
Industrial	GSG	Heating	79%	79%	82%	82%	82%	82%	82%	82%	82%	82%	82%
		Non-Heating	74%	75%	79%	78%	78%	78%	78%	78%	78%	78%	78%
		Total	78%	78%	81%	81%	81%	81%	81%	81%	81%	81%	81%
	LVG		26%	25%	26%	26%	26%	26%	26%	26%	26%	26%	26%
	TSG	Firm	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Non-Firm	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
		Total	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
	CIG		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	CSG		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Contract		13%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Total		4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Lighting	SLG		39%	37%	38%	39%	39%	39%	39%	39%	39%	39%	39%
Total			53%	52%	47%	47%	47%	47%	48%	48%	48%	49%	49%

ATTACHMENT 2

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
DONNA M. POWELL
ASSISTANT CONTROLLER - PSE&G

Q. Please state your name and address for the record.

A. My name is Donna M. Powell. My business address is 80 Park Plaza, Newark, New Jersey, 07102.

Q. In what capacity are you employed?

A. I am employed by PSEG Services Corporation (PSEG Services), a subsidiary of Public Service Enterprise Group Incorporated (PSEG or Enterprise), as Assistant Controller-PSE&G. I am responsible for all accounting matters for Public Service Electric and Gas (PSE&G or the Company).

Q. Please describe your employment experience and educational background.

A. I hold a B.S in Accounting from Villanova University and I am a Certified Public Accountant. I have been employed by PSEG Services since February 2012, serving as Assistant Controller-PSE&G. In my role as Assistant Controller – PSE&G, I am responsible for all accounting matters for PSE&G and I direct the utility accounting functions including regulatory compliance thereon. I have previously testified on behalf of PSE&G to the BPU.

Prior to joining PSEG, I was employed by New Jersey American Water Company from 2007 to 2012 as Vice-President of Finance where I was

responsible for all of the financial aspects of that company, including business planning, regulatory strategy and rate support, and all financial, statutory and management reporting. From 1998 to 2007, I worked in various financial capacities at Pepco Holdings, Inc. (formerly Conectiv, Inc. and Atlantic City Electric Company), including testifying before the New Jersey Board of Public Utilities in 1998 in support of Atlantic City Electric Company's request for stranded cost recovery as a result of deregulation. I also worked for nine years with Deloitte & Touche in various capacities from entry level auditor through Senior Manager, where, in that role, I worked primarily in the utility sector and was designated a utility industry accounting and auditing expert.

Q. Please describe the purpose of your testimony.

A. The purpose of this testimony is to describe the Weather Normalization Charge (WNC) to be implemented by PSE&G for the Annual Period (October 1, 2020 to September 30, 2021) and recovered from customers taking service on the Company's Residential Service (RSG), General Service (GSG) and Large Volume Service (LVG) rate schedules during the Winter Period of October 1, 2020 through May 31, 2021. As part of this discussion, I will define certain adjustments to the WNC made in accordance with the WNC Tariff and which

support the request by PSE&G to recognize $33,742,007 in shortfall revenues. The total deficiency of $33,742,007 is comprised of two components:

- $33,939,806 of margin revenue shortfall resulting from the 2019-2020 Winter Period, less
- $197,799 which represents the remaining over-collection from the 2018-2019 Winter Period approved for refund over the 2019-2020 Winter Period.

Q. Please describe the schedules you are sponsoring for this proceeding.

A. I am sponsoring the following Schedules:

- Schedule DMP-WNC-1: 2019-2020 Winter Period Weather Normalization Calculation
- Schedules DMP-WNC-2a and DMP-WNC-2b: Weather Normalization Earnings Test and Supporting Schedule of Adjusted Gas Jurisdictional Net Income for the 2019-2020 Annual Period
- Schedule DMP-WNC-3: Refund Schedule for the 2018-2019 WNC over collection during the 2019-2020 Winter Period
- Schedule DMP-WNC-4: Summary Schedule of WNC Calculation for the Annual Period October 1, 2020 to September 30, 2021

Q. Please describe the Weather Normalization Charge.

A. The Company's WNC is a rate mechanism that, in general, mitigates the financial effect of variations from the normal weather on which base rates are set, on both the Company and its customers receiving service under the RSG, GSG, and LVG rate schedules. Variances in actual degree days from normal for each day are measured and accumulated over the calendar-month for each month in the Winter Period. These monthly variances are adjusted for a degree day dead band which is ½% of the normal calendar-month degree days. The resulting cumulative degree day variance, along with the trued-up degree day consumption factors, determines, along with any prior WNC balances, the adjustment to customers' bills in the following Winter Period. This adjustment is either a surcharge to collect a revenue deficiency as a result of warmer than normal weather or a credit to customers to refund the excess revenues collected as a result of colder than normal weather.

In accordance with B.P.U.N.J. No. 16 Gas Tariff Sheets Nos. 45, 46, 47 (WNC Tariff), the Company has updated the number of base customers and therms per degree day by rate class, and calculated the margin revenue used in determining the (excess)/deficient margin revenues for the 2019-2020 Winter Period.

Q. How is the 2019-2020 WNC deficiency calculated?

A. In accordance with the WNC Tariff, the Company has calculated the level by which margin revenues differed from what would have resulted if normal weather occurred for the 2019-2020 Winter Period. The normalized degree day variance produced a margin revenue deficit of $33,939,806 during the 2019-2020 Winter Period. This calculation is set forth on Schedule DMP-WNC-1.

There are three (3) steps to this process as shown in Schedule DMP-WNC-1. These are:

- Step 1: Determination of the degree day variance after the ½% dead band adjustment.
- Step 2: Determination of the normalized volumes by rate class, by multiplying the (excess)/deficient degree day variance by the trued-up consumption factors to determine the (excess)/deficient volumes.
- Step 3: Calculation of the Margin Revenue Deferral prior to application of the earnings test, by multiplying the (excess)/deficient volumes by the Margin Revenue Factor for each of the rate classes.

In addition, the Company applied the WNC Earnings Test, which confirmed that no further adjustment is necessary to the 2019-2020 margin revenue deficit.

Q. Please explain the earnings test requirement.

A. As set forth in the WNC Tariff, the WNC shall not operate to permit the Company to recover any portion of a margin revenue deficiency that will cause the Company to earn in excess of its allowed rate of return on common equity of 9.60% for the Annual Period. For purposes of this tariff, the Company's rate of return on common equity is calculated by dividing the gas portion of the Company's regulated jurisdictional net income for the Annual Period by the gas portion of the Company's average 13-month common equity balance for the Annual Period.

Q. How is common equity calculated for the earnings test?

A. As set forth in the WNC tariff, the 13 month average common equity balance shall be calculated by adding the Net Gas Utility Plant in Service (Gas Plant in Service, excluding plant held for future use and excluding plant for which the Company receives recovery from clause mechanisms that provide for a return on investment outside of base rates, less Accumulated Depreciation Reserve) less Accumulated Deferred Income Taxes plus working capital associated with Materials and Supplies Inventory and Prepayments at the beginning of the Annual Period (i.e., October 1) and the month ending balances for each of the twelve months in the Annual Period divided by thirteen (13), and multiplying by 54% (the equity percentage of the Company's capital structure). See Schedule

DMP-WNC-2a for the calculation based on actual results from October 1, 2019 through May 31, 2020 and a forecast from June 1, 2020 through September 30, 2020.

Q. How is the regulated jurisdictional net income calculated?

A. The gas portion of the Company's jurisdictional net income is calculated by subtracting the net income derived from the WNC, and the gas portion of the Green Programs Recovery Charge, which provides for a return on investment outside of base rates, from total regulatory net income of the gas portion of the Company. Net income for this calculation is the Company's regulatory operating income less interest expense, consistent with the calculation of regulatory net income in the earnings test utilized in the Company's Gas System Modernization II (GSMPII) Program. See Schedule DMP-WNC-2b for the calculation based on actual results from October 1, 2019 through May 31, 2020 and a forecast from June 1, 2020 through September 30, 2020.

Q. What are the results of the earnings test?

A. As calculated in accordance with the tariff as described above, the Company's allowed net income for the 2019-2020 Winter Period for purposes of the Earnings Test is $255,534,000. The allowed net income is calculated by multiplying the estimated 13 month average gas rate base by the Company's

allowed common equity percentage of 54% and by its allowed ROE of 9.60%. Please refer to DMP-WNC-2a. In this proceeding, the Company's forecasted net income for the Annual Period ended September 30, 2020 is $230,956,000 or $24,579,000 less than the allowed amount (which equates to $34,194,000 on a pre-tax basis). Since the 2019-2020 Winter Period margin deficiency is calculated at $33,742,007 on a pre-tax basis compared to the allowed pre-tax amount of $34,194,000, there is $0 limitation as a result of the required Earnings Test.

Q. Are there any adjustments necessary for the calculation of the 2019-2020 WNC deferral and recovery request?

A. Yes, as discussed above, PSE&G has made one adjustment to the 2019-2020 Winter Period margin revenue deficiency in order to calculate the amount to be collected from ratepayers over the 2020-2021 Winter Period.

Q. Please describe this adjustment required to calculate the total 2019-2020 WNC.

A. In Docket No. GR19060761, the Board approved the refund of $8,201,995 over the 2019-2020 Winter Period. Due to the warmer than normal 2019-2020 winter weather, customer volumes were lower than anticipated, which resulted in a shortfall of the 2019-2020 Winter Period refund. The Company refunded $8,004,196 resulting in a remaining balance to be refunded to customers of $197,799. Please refer to Schedule DMP-WNC-3 for a schedule of the monthly

refund of the prior years' WNC excess margin balance during the 2019-2020 Winter Period.

Q. Please summarize the results of your calculations and adjustments.

A. Based on the Board-approved method for calculating the WNC, the Company respectfully requests approval to recover $33,742,007 over the 2020-2021 Winter Period. Please see DMP-WNC-4 for a summary schedule of the balance. The specific rate impacts and calculations relative to the 2020-2021 Winter Period collection will be discussed in the testimony of Stephen Swetz. Mr. Swetz also calculates the 3% rate cap on the RSG rate and demonstrated that the requested $33,742,007 is below the 3% rate cap set forth in the WNC tariff.

Q. Does this conclude your testimony in this matter?

A. Yes.

PSE&G
Weather Normalization
2019-2020 Winter Period

Step 1: Determine the degree day variance from the dead band.

	Normal Degree Days	0.50% Dead Band	Dead Band Low End	Dead Band High End	Actual Degree Days	Normalization Amount (1)
October	243	1	242	244	178	64
November	516	3	514	519	650	(131)
December	827	4	823	831	836	(5)
January	1,003	5	998	1,008	805	192
February	858	4	854	862	732	122
March	692	3	688	695	540	148
April	358	2	356	359	446	(87)
May	124	1	123	124	182	(57)

Step 2: Determine the normalized volumes by rate class.

	Therms Per Degree Day (2)			Normalization Volumes (3)		
	RSG	GSG	LVG	RSG	GSG	LVG
October	155,872	17,368	88,550	9,904,107	1,103,563	5,626,467
November	249,538	31,588	88,550	(32,642,066)	(4,132,026)	(11,583,226)
December	246,824	54,161	88,550	(1,189,692)	(261,056)	(426,811)
January	284,118	68,715	89,001	54,590,433	13,202,900	17,100,652
February	291,909	59,983	89,001	35,647,927	7,325,124	10,868,802
March	292,968	61,432	89,001	43,341,686	9,088,250	13,166,808
April	270,873	61,014	89,001	(23,487,398)	(5,290,524)	(7,717,277)
May	196,672	17,503	89,001	(11,269,306)	(1,002,922)	(5,099,757)

Step 3: Calculate the margin revenue to be deferred.

	Margin Revenue Deferral (4)			
Margin Revenue Factor:				
December 2019- May 2020	**0.36071**	**0.28830**	**0.04198**	
October 2019 - November 2019	**0.35139**	**0.28326**	**0.04181**	**Total**
October	$ 3,480,224	$ 312,591	$ 235,243	$ 4,028,057
November	$ (11,470,161)	$ (1,170,421)	$ (484,295)	$ (13,124,877)
December	$ (429,129)	$ (75,262)	$ (17,917)	$ (522,308)
January	$ 19,691,097	$ 3,806,383	$ 717,868	$ 24,215,348
February	$ 12,858,421	$ 2,111,826	$ 456,261	$ 15,426,509
March	$ 15,633,606	$ 2,620,133	$ 552,729	$ 18,806,469
April	$ (8,472,045)	$ (1,525,253)	$ (323,964)	$ (10,321,262)
May	$ (4,064,906)	$ (289,141)	$ (214,083)	$ (4,568,130)
Winter Period Total	$ 27,227,107	$ 5,790,855	$ 921,844	$ 33,939,806

Step 3: Calculate the margin revenue to be deferred.

Recovery of any amount that would cause the company to earn in excess of the allowed ROE (9.6%) is prohibited.

(1) Amount above or below the Dead Band
(2) Consumption factors to be true-up at the end of the Winter Period for actual # of customers.
(3) Normalization degree days x Therms Per Degree Day
(4) Normalization Volumes x Margin Revenue Factor

PSE&G
Weather Normalization
Earnings Test
Weather Year Ended September 2020

		Gas Plant In Service*	Accumulated Depreciation	Accumulated Deferred Taxes	Materials & Supplies	Prepayments	Net Plant in Service
September-19	Actuals	$ 8,711,684	$ (2,405,454)	$ (1,724,609)	$ 41,379	$ 51,948	$ 4,674,949
October-19	Actuals	$ 8,770,776	$ (2,412,472)	$ (1,723,800)	$ 41,651	$ 53,722	$ 4,729,877
November-19	Actuals	$ 8,821,324	$ (2,418,134)	$ (1,722,234)	$ 41,841	$ 52,448	$ 4,775,246
December-19	Actuals	$ 8,857,708	$ (2,414,032)	$ (1,715,926)	$ 42,155	$ 21,013	$ 4,790,918
January-20	Actuals	$ 8,907,759	$ (2,419,417)	$ (1,721,673)	$ 42,128	$ 0	$ 4,808,797
February-20	Actuals	$ 8,950,280	$ (2,423,230)	$ (1,727,449)	$ 41,960	$ (0)	$ 4,841,561
March-20	Actuals	$ 8,992,184	$ (2,423,465)	$ (1,730,486)	$ 41,704	$ 2,471	$ 4,882,407
April-20	Actuals	$ 9,029,718	$ (2,434,103)	$ (1,726,300)	$ 41,532	$ 2,550	$ 4,913,397
May-20	Actuals	$ 9,075,248	$ (2,448,004)	$ (1,719,364)	$ 41,527	$ 56,663	$ 5,006,070
June-20	Forecast	$ 9,193,742	$ (2,485,282)	$ (1,725,513)	$ 41,527	$ 50,000	$ 5,074,475
July-20	Forecast	$ 9,263,319	$ (2,494,408)	$ (1,726,146)	$ 41,527	$ 50,000	$ 5,134,292
August-20	Forecast	$ 9,332,888	$ (2,502,404)	$ (1,726,801)	$ 41,527	$ 50,000	$ 5,195,210
September-20	Forecast	$ 9,401,263	$ (2,511,826)	$ (1,727,404)	$ 41,527	$ 50,000	$ 5,253,560
13 Month Average		$ 9,023,684	$ (2,445,556)	$ (1,724,439)	$ 41,691	$ 33,909	$ 4,929,289

Equity Ratio	54.00%
Average Equity	$ 2,661,816
Allowed ROE	9.6%
Allowed Net Income	$ 255,534
Forecasted Net Income	$ 230,956
Maximum Recoverable through WNC - after tax	$ 24,579
Maximum Recoverable through WNC - pre-tax	$ 34,194

**** Excludes $96K of Plant Held for Future Use***

PSE&G

Adjusted Gas Jurisdictional Net Income

Annual Period October 1, 2019 to September 30, 2020

	Gas Net Income	Less: WNC (1)	Less: GPRC NI	Adjusted NI for WNC & GPRC	
Oct-19	3,417,000	2,895,368	183,982	337,650	Actual
Nov-19	37,850,000	(9,434,161)	190,846	47,093,315	Actual
Dec-19	56,608,000	(375,435)	194,752	56,788,683	Actual
Jan-20	74,010,000	17,405,992	195,041	56,408,967	Actual
Feb-20	82,102,000	11,088,574	200,964	70,812,462	Actual
Mar-20	48,354,000	13,518,090	202,199	34,633,711	Actual
Apr-20	7,540,000	(7,418,923)	203,299	14,755,624	Actual
May-20	(7,478,000)	(3,283,572)	203,987	(4,398,415)	Actual
Jun-20	5,064,600	-		5,064,600	*Forecasted, excluding GPRC*
Jul-20	(23,826,000)	-		(23,826,000)	*Forecasted, excluding GPRC*
Aug-20	(22,887,000)	-		(22,887,000)	*Forecasted, excluding GPRC*
Sep-20	(3,828,000)	-		(3,828,000)	*Forecasted, excluding GPRC*
	256,926,600	24,395,932	1,575,070	230,955,598	

(1) Represents the Margin Deficiency per DMP-WNC-1 multiplied by effective tax rate factor of 0.7188

PSE&G

Refund Schedule for Prior Years' Winter Period Overcollections

For the Winter Period effective October 1, 2019 to May 31, 2020

Prior WNC Periods Total WNC Balance to be refunded to customers	**(a)**	$	(8,201,995)	Per Docket No. GR19060761
Amounts refunded to/(collected from) customers per month:				
Oct-19		$	126,237	
Nov-19		$	669,222	
Dec-19		$	1,529,886	
Jan-20		$	1,617,510	
Feb-20		$	1,516,840	
Mar-20		$	1,208,805	
Apr-20		$	812,207	
May-20		$	523,490	
	(b)	$	8,004,196	
Remaining amount to be refunded to customers		$	(197,799)	***(a) plus (b)***

To DMP-WNC-4

PSE&G
Weather Normalization Summary Schedule
Annual Period October 1, 2019 to September 30, 2020

			Schedule Reference
2019-2020 Winter Period Total WNC Revenue Shortfall	$ 33,939,806	***(a)***	**DMP-WNC-1**
Remaining balance from the 2018-2019 WNC, to be refunded during 2020-2021 Winter Period	($197,799)	***(b)***	**DMP-WNC-3**
. Total WNC Balance to be colletcted from customers	$ 33,742,007	***(c)***	***(a) + (b)***

ATTACHMENT 3

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DIRECT TESTIMONY
OF
STEPHEN SWETZ
SENIOR DIRECTOR - CORPORATE RATES AND REVENUES REQUIREMENTS

Q. Please state your name and business address.

A. My name is Stephen Swetz. My business address is 80 Park Plaza, T-8, Newark, New Jersey 07102.

Q. By whom are you employed and in what capacity?

A. I am the Senior Director - Corporate Rates and Revenues Requirements, PSEG Services Corporation. My credentials are set forth in the attached Schedule SS-WNC-1.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss Public Service Electric and Gas Company's (PSE&G, the Company) derivation of the Weather Normalization Charge (WNC) to be applied during the Winter Period of October 1, 2020 through May 31, 2021 to the Company's Residential Service (RSG), General Service (GSG) and Large Volume Service (LVG) rate schedules.

Q. Does your testimony include any schedules?

A. Yes. My testimony includes Schedule SS-WNC-1, which contains my qualifications, and Schedule SS-WNC-2, which was prepared under my direct supervision. Schedule SS-WNC-2 details the calculation of the 3% WNC rate cap limit on the RSG total per therm rate of balancing therms over an 8 month period.

Q. Please describe the WNC mechanism.

A. As set forth in the Testimony of PSE&G Witness Stephen A. Wreschnig, the Company's WNC is a rate mechanism that, in general, mitigates the financial effect of variations from the normal weather on which rates are set on both the Company and its customers in RSG, GSG and LVG Rate Schedules. Variances in actual degree days from normal for each day are accumulated for each month of the Winter Period (October through May). These variances are adjusted for a degree day dead band, which is 1/2% of the normal calendar month degree days. The resulting cumulative degree day variance, along with the trued-up Degree Day Consumption Factors and Margin Revenue Factors, determine the Margin Revenue Deferral. This Margin Revenue Deferral is either a charge to collect a revenue deficiency as a result of warmer than normal weather or a credit to customers to refund the excess revenues collected as a result of colder than normal weather.

Q. What is the result of the WNC mechanism for the 2019-2020 Winter Period?

A. As shown in Donna M. Powell's Testimony, Schedule DMP-WNC-1, the Margin Revenue calculation indicates a margin (excess)/deficit for the 2019-2020 Winter Period of $33,939,806. Pursuant to the WNC tariff, this deficit is subject to an earnings test. As a result of the application of the WNC Earnings Test, there is no adjustment to the 2019-2020 Winter Period margin deficiency of $33,939,806. See Schedule DMP-WNC-2a.

Q. Are there any other calculations necessary for the determination of the 2020-2021 WNC recovery request?

A. Yes. As shown in Donna M. Powell's Testimony, Schedule DMP-WNC-3, the margin deficit from this 2019-2020 Winter Period is offset by a remaining over-collection from the 2018-2019 Winter Period of $197,799. This is comprised of a carryover excess of ($8,201,995) as of September 30, 2019 and amounts refunded or collected from customers over the 2019-2020 Winter Period of $8,004,196. The total WNC balance to be refunded after these adjustments is ($197,799) as shown in Schedule DMP-WNC-3.

Q. What is the net WNC balance to be collected from customers over the 2020-2021 Winter Period?

A. As shown in Schedule DMP-WNC-4, the net WNC amount to be collected from customers is $33,742,007. This amount reflects the 2019-2020 Winter Period

deferral of $33,939,806 less the remaining over-collected balance from the 2018-2019 Winter Period of $197,799.

Q. Are there any other limitations on setting the WNC?

A. As stated in Section II of the Company's proposed WNC Tariff Sheet 47 (Attachment 4), the Weather Normalization Charge will at no time exceed three (3%) percent of the then applicable RSG total per therm rate, including BGSS - RSG charges and 73.32% of the Balancing Charge.

Q. How is the 3% WNC rate cap limit calculated?

A. As shown in Schedule SS-WNC-2, the total per therm rate after applying the effective annualized balancing charge equates to $0.749046 (with SUT) per therm. The 3% rate cap limit results in a rate cap limit of $36,829,377 and WNC rate of $0.022471 per therm with SUT ($0.021075 per therm without SUT). Since the 3% rate cap limit is greater than the total proposed WNC balance of $33,742,007, there is no 3% cap application as the resulting rate of $0.020587 per therm with SUT ($0.019308 per therm without SUT) is a rate lower than the 3% WNC rate cap.

Q. Please show the WNC calculation.

A. The WNC calculation is shown below:

	Forecasted Balancing Therms	Schedule SAW-WNC-4
1	Recovery Request for 2020-2021 Winter Period (Schedule DMP-WNC-4)	$ 33,742,007
2	Forecasted Balancing Therms	1,747,538,636
3=1/2	Weather Normalization Charge (per Balancing Therm)	$0.019308
4=3*1.06625	Weather Normalization Charge (Including Sales and Use Tax(SUT)	$0.020587

Q. What is PSE&G's proposal to implement the WNC for the 2020-2021 annual period?

A. As a result of these calculations, PSE&G proposes a WNC of $0.020587 with SUT per therm ($0.019308 per therm without SUT) per balancing therm applicable to Rate Schedules RSG, GSG and LVG for the 2020-2021 Winter period.

Q. Does this conclude your testimony?

A. Yes.

CREDENTIALS
OF
STEPHEN SWETZ
SR. DIRECTOR-CORPORATE RATES AND REVENUE REQUIREMENTS

My name is Stephen Swetz and I am employed by PSEG Services Corporation. I am the Sr. Director - Corporate Rates and Revenue Requirements where my main responsibility is to contribute to the development and implementation of electric and gas rates for Public Service Electric and Gas Company (PSE&G, the Company).

WORK EXPERIENCE

I have over 30 years of experience in Rates, Financial Analysis and Operations for three Fortune 500 companies. Since 1991, I have worked in various positions within PSEG. I have spent most of my career contributing to the development and implementation of PSE&G electric and gas rates, revenue requirements, pricing and corporate planning with over 20 years of direct experience in Northeastern retail and wholesale electric and gas markets.

As Sr. Director of Corporate Rates and Revenue Requirements, I have submitted pre-filed direct cost recovery testimony as well as oral testimony to the New Jersey Board of Public Utilities and the New Jersey Office of Administrative Law for base rate cases, as well as a number of clauses including infrastructure investments, renewable energy, and energy efficiency programs. A list of my prior testimonies can be found on pages 3 and 4 of this document. I have also contributed to other filings including

unbundling electric rates and Off-Tariff Rate Agreements. I have had a leadership role in various economic analyses, asset valuations, rate design, pricing efforts and cost of service studies.

I am an active member of the American Gas Association's Rate and Strategic Issues Committee, the Edison Electric Institute's Rates and Regulatory Affairs Committee and the New Jersey Utility Association (NJUA) Finance and Regulatory Committee.

EDUCATIONAL BACKGROUND

I hold a B.S. in Mechanical Engineering from Worcester Polytechnic Institute and an MBA from Fairleigh Dickinson University.

LIST OF PRIOR TESTIMONIES

Company	Utility	Docket	Testimony	Date	Case / Topic
Public Service Electric & Gas Company	**G**	GR20060464-	written	Jun-20	Gas System Modernization Program II (GSMP II)
Public Service Electric & Gas Company	E	ER20060454	written	Jun-20	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR20060384	written	Jun-20	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E	ER20040324	written	Apr-20	Transitional Renewable Energy Certificate Program (TREC)
Public Service Electric & Gas Company	E/G	GR20010073	written	Jan-20	Remediation Adjustment Charge-RAC 27
Public Service Electric & Gas Company	G	GR19120002	written	Dec-19	Gas System Modernization Program II (GSMPII) - Second Roll-In
Public Service Electric & Gas Company	E/G	ER19091302 & GR19091303	written	Aug-19	Tax Adjustment Clauses (TACs)
Public Service Electric & Gas Company	E/G	ER19070850	written	Jul-19	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER19060764 & GR19060765	written	Jun-19	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, S4AEXT II, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	G	GR19060766	written	Jun-19	Gas System Modernization Program II (GSMPII) - First Roll-In
Public Service Electric & Gas Company	G	GR19060761	written	Jun-19	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E	ER19060741	written	Jun-19	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	E/G	EO18060629 - GO18060630	oral	Jun-19	Energy Strong II / Revenue Requirements & Rate Design
Public Service Electric & Gas Company	G	GR19060698	written	May-19	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E	ER19040523	written	May-19	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	E/G	EO18101113 - GO18101112	oral	May-19	Clean Energy Future - Energy Efficiency Program Approval
Public Service Electric & Gas Company	E	ER19040530	written	Apr-19	Madison 4kV Substation Project (Madison & Marshall)
Public Service Electric & Gas Company	E/G	EO18101113 - GO18101112	written	Dec-18	Clean Energy Future - Energy Efficiency Program Approval
Public Service Electric & Gas Company	E/G	GR18121258	written	Nov-18	Remediation Adjustment Charge-RAC 26
Public Service Electric & Gas Company	G	GR18070831	written	Jul-18	Gas System Modernization Program (GSMP) - Third Roll-In
Public Service Electric & Gas Company	E/G	ER18070688 - GR18070689	written	Jun-18	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, S4AEXT II, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER18060681	written	Jun-18	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR18060675	written	Jun-18	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	EO18060629 - GO18060630	written	Jun-18	Energy Strong II / Revenue Requirements & Rate Design
Public Service Electric & Gas Company	G	GR18060605	written	Jun-18	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER18040358 - GR18040359	written	Mar-18	Energy Strong / Revenue Requirements & Rate Design - Eighth Roll-in
Public Service Electric & Gas Company	E/G	ER18030231	written	Mar-18	Tax Cuts and Job Acts of 2017
Public Service Electric & Gas Company	E/G	GR18020093	written	Feb-18	Remediation Adjustment Charge-RAC 25
Public Service Electric & Gas Company	E/G	ER18010029 and GR18010030	written	Jan-18	Base Rate Proceeding / Cost of Service & Rate Design
Public Service Electric & Gas Company	E	ER17101027	written	Sep-17	Energy Strong / Revenue Requirements & Rate Design - Seventh Roll-in
Public Service Electric & Gas Company	G	GR17070776	written	Jul-17	Gas System Modernization Program II (GSMP II)
Public Service Electric & Gas Company	G	GR17070775	written	Jul-17	Gas System Modernization Program (GSMP) - Second Roll-In
Public Service Electric & Gas Company	G	GR17060720	written	Jul-17	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	ER17070724 - GR17070725	written	Jul-17	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, S4AEXT II, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER17070723	written	Jul-17	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR17060593	written	Jun-17	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER17030324 - GR17030325	written	Mar-17	Energy Strong / Revenue Requirements & Rate Design - Sixth Roll-in
Public Service Electric & Gas Company	E/G	EO14080897	written	Mar-17	Energy Efficiency 2017 Program
Public Service Electric & Gas Company	E/G	ER17020136	written	Feb-17	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E/G	GR16111064	written	Nov-16	Remediation Adjustment Charge-RAC 24
Public Service Electric & Gas Company	E	ER16090918	written	Sep-16	Energy Strong / Revenue Requirements & Rate Design - Fifth Roll-in
Public Service Electric & Gas Company	E	EO16080788	written	Aug-16	Construction of Mason St Substation
Public Service Electric & Gas Company	E	ER16080785	written	Aug-16	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	G	GR16070711	written	Jul-16	Gas System Modernization Program (GSMP) - First Roll-In
Public Service Electric & Gas Company	G	GR16070617	written	Jul-16	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	ER16070613 - GR16070614	written	Jul-16	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER16070616	written	Jul-16	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR16060484	written	Jun-16	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E	EO16050412	written	May-16	Solar 4 All Extension II (S4Allext II) / Revenue Requirements & Rate Design
Public Service Electric & Gas Company	E/G	ER16030272 - GR16030273	written	Mar-16	Energy Strong / Revenue Requirements & Rate Design - Fourth Roll-in
Public Service Electric & Gas Company	E/G	GR15111294	written	Nov-15	Remediation Adjustment Charge-RAC 23
Public Service Electric & Gas Company	E	ER15101180	written	Sep-15	Energy Strong / Revenue Requirements & Rate Design - Third Roll-in
Public Service Electric & Gas Company	E/G	ER15070757-GR15070758	written	Jul-15	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, SLII, SLIII / Cost Recovery
Public Service Electric & Gas Company	E	ER15060754	written	Jul-15	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR15060748	written	Jul-15	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	G	GR15060646	written	Jun-15	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER15050558	written	May-15	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E	ER15050558	written	May-15	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER15030389-GR15030390	written	Mar-15	Energy Strong / Revenue Requirements & Rate Design - Second Roll-in
Public Service Electric & Gas Company	G	GR15030272	written	Feb-15	Gas System Modernization Program (GSMP)
Public Service Electric & Gas Company	E/G	GR14121411	written	Dec-14	Remediation Adjustment Charge-RAC 22
Public Service Electric & Gas Company	E/G	ER14091074	written	Sep-14	Energy Strong / Revenue Requirements & Rate Design - First Roll-in
Public Service Electric & Gas Company	E/G	EO14080897	written	Aug-14	EEE Ext II
Public Service Electric & Gas Company	G	ER14070656	written	Jul-14	Weather Normalization Charge / Cost Recovery

LIST OF PRIOR TESTIMONIES

Company	Utility	Docket	Testimony	Date	Case / Topic
Public Service Electric & Gas Company	E	ER14070650	written	Jul-14	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR14050511	written	May-14	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	GR14040375	written	Apr-14	Remediation Adjustment Charge-RAC 21
Public Service Electric & Gas Company	E/G	ER13070603-GR13070604	written	Jun-13	Green Programs Recovery Charge (GPRC)-Including DR, EEE, EEE Ext, CA, S4All, SLII / Cost Recovery
Public Service Electric & Gas Company	E	ER13070605	written	Jul-13	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	G	GR13070615	written	Jun-13	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	G	GR13060445	written	May-13	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E/G	EO13020155-GO13020156	written/oral	Mar-13	Energy Strong / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	G	GO12030188	written/oral	Mar-13	Appliance Service / Tariff Support
Public Service Electric & Gas Company	E	ER12070599	written	Jul-12	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	E/G	ER12070606-GR12070605	written	Jul-12	RGGI Recovery Charges (RRC)-Including DR, EEE, EEE Ext, CA, S4All, SLII / Cost Recovery
Public Service Electric & Gas Company	E	EO12080721	written/oral	Jul-12	Solar Loan III (SLIII) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO12080721	written/oral	Jul-12	Solar 4 All Extension(S4Allext) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	G	GR12060489	written	Jun-12	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	G	GR12060583	written	Jun-12	Weather Normalization Charge / Cost Recovery
Public Service Electric & Gas Company	E/G	ER12030207	written	Mar-12	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E	ER12030207	written	Mar-12	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	G	GR11060338	written	Jun-11	Margin Adjustment Charge (MAC) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	G	GR11060395	written	Jun-11	Weather Normalization Charge / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO11010030	written	Jan-11	Economic Energy Efficiency Extension (EEEext) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E/G	ER10100737	written	Oct-10	RGGI Recovery Charges (RRC)-Including DR, EEE, CA, S4All, SLII / Cost Recovery
Public Service Electric & Gas Company	E/G	ER10080550	written	Aug-10	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E	ER10080550	written	Aug-10	Non-Utility Generation Charge (NGC) / Cost Recovery
Public Service Electric & Gas Company	E/G	GR09050422	written/oral	Mar-10	Base Rate Proceeding / Cost of Service & Rate Design
Public Service Electric & Gas Company	E	ER10030220	written	Mar-10	Solar Pilot Recovery Charge (SPRC-Solar Loan I) / Cost Recovery
Public Service Electric & Gas Company	E	EO09030249	written	Mar-09	Solar Loan II(SLII) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E/G	EO09010056	written	Feb-09	Economic Energy Efficiency(EEE) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO09020125	written	Feb-09	Solar 4 All (S4All) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E	EO08080544	written	Aug-08	Demand Response (DR) / Revenue Requirements & Rate Design - Program Approval
Public Service Electric & Gas Company	E/G	ER10100737	written	Jun-08	Carbon Abatement (CA) / Revenue Requirements & Rate Design - Program Approval

Schedule SS-WNC-2

Weather Normailzation Clause
2020-2021 WNC Rate Cap Calculation (8 month balancing)

Residential Service (RSG)		Service Chg with SUT	Per Therm Charges as of 6/01/20 with SUT
Service Charge		$8.62	
Distribution Charge			$0.384603
Societal Benefits Charge (SBC)			$0.055688
Green Programs Recovery Charge (GPRC)			$0.004361
Margin Adjustment Charge (MAC)			-$0.009239
Tax Adjustment Credit (TAC)			-$0.078803
Captial Adjustment Charge (CAC)			
Service Charge		$0.00	
Distribution Charge			$0.000000
Margin Adjustment Charge (MAC)			$0.000000
BGSS-RSG			$0.320127
	Subtotal	$8.62	$0.676737
(1) Effective Annualize Balancing Charge			$0.072309
Total per therm rate			$0.749046
Weather Normalization Charge Cap %			3.00%
Weather Normalization Charge Cap with SUT			$0.022471
Weather Normalization Charge Cap without SUT			$0.021075
Total Forecasted Balancing Therms Per 2020 Schedule SAW-WNC-4			1,747,538,636
Amount allowed to recover in 2020-2021 Winter Period based on 3% WNC Rate Cap and Forecasted Balancing Therms			$36,829,377

(1) Balancing Charge Ratio From 2020 SAW-WNC-5	Balancing Charge w SUT	Effective Annualized Balancing Charge
73.32%	$0.098620	$0.072309

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 45**
Superseding
B.P.U.N.J. No. 16 GAS **XXX Revised Sheet No. 45**

WEATHER NORMALIZATION CHARGE

CHARGE APPLICABLE TO RATE SCHEDULES RSG, GSG, LVG (Per Balancing Therm)

	Weather Normalization Charge	Weather Normalization Charge including SUT
October 1, ~~2019~~ 2020 through May 31, ~~2020~~2021	$0.019308 ~~$(0.004800)~~	$0.020587 ~~$(0.005118)~~
June 1, ~~2020~~ 2021 through September 30, ~~2020~~2021	$0.000000	$0.000000

Weather Normalization Charge

This charge shall be applicable to the rate schedules listed above. The weather normalization charge applied in each Winter Period shall be based on the differences between actual and normal weather during the preceding winter period. The weather normalization charge shall be determined as follows:

I. DEFINITION OF TERMS AS USED HEREIN

1. Degree Days (DD)
- the difference between 65°F and the mean daily temperature for the day. The mean daily temperature is the simple average of the 24 hourly temperature observations for a day.

2. Actual Calendar Month Degree Days
- the accumulation of the actual Degree Days for each day of a calendar month.

3. Normal Calendar Month Degree Days
- the level of calendar month degree days to which this clause applies.

The normal calendar month Degree Days used in this clause will be the twenty-year average of the National Oceanic and Atmospheric Administration (NOAA) First Order Weather Observation Station at the Newark airport and will be updated annually in the Weather Normalization Clause (WNC) proceeding. The base level of normal degree days for the defined winter period months for the ~~2019~~2020-~~2020~~ 2021 Winter Period are set forth in the table below:

	Normal Degree Days
Oct - ~~19~~20	237.73 ~~243.01~~
Nov - ~~19~~20	526.11 ~~516.21~~
Dec - ~~19~~20	829.32 ~~827.33~~
Jan - ~~20~~21	1,004.41 ~~1,002.61~~
Feb - ~~20~~21	838.29 ~~858.04~~
Mar - ~~20~~21	693.37 ~~691.71~~
Apr - ~~20~~21	354.96 ~~357.63~~
May - ~~20~~21	125.01 ~~123.71~~

4. Winter Period
- shall be the eight consecutive calendar months from October of one calendar year through May of the following calendar year.

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 46**
Superseding
B.P.U.N.J. No. 16 GAS **XXX Revised Sheet No. 46**

WEATHER NORMALIZATION CHARGE (Continued)

5. Degree Day Dead Band
- shall be one-half (1/2 %) percent of the sum of the cumulative Normal Calendar Month Degree Days for the Winter Period and shall be allocated to each winter month in the same proportion as the ratio of the normal degree days for that month to the total normal degree days.

6. Degree Day Consumption Factors
- the use per degree day component of the gas sales equations by month used in forecasting firm gas sales for the applicable rate schedules. These factors will be updated annually in the WNC proceeding. Degree day Consumption Factors for the ~~2019~~2020 ~~2020~~ 2021 Winter Period are set forth below and presented as therms per degree day:

	RSG-Residential		Commercial			Industrial		
Month			GSG		LVG	GSG		LVG
	Heating	Non-Heating	Heating	Non-Heating		Heating	Non-Heating	
Oct.-~~19~~20	157,174 ~~147,748~~	(2,282) ~~3,466~~	20,172 ~~15,975~~	874 ~~836~~	88,054 ~~81,850~~	446 ~~557~~	-	7,783 ~~6,700~~
Nov.-~~19~~20	248,711 ~~233,569~~	3,549 ~~8,816~~	36,363 ~~27,829~~	2,550 ~~2,529~~	88,054 ~~81,850~~	1,166 ~~1,103~~	136 ~~127~~	7,783 ~~6,700~~
Dec.-~~19~~20	247,054 ~~228,514~~	4,468 ~~11,406~~	50,391 ~~49,065~~	3,626 ~~3,510~~	88,054 ~~81,850~~	2,178 ~~1,393~~	196 ~~193~~	7,783 ~~6,700~~
Jan.-~~20~~21	288,954 ~~264,384~~	4,382 ~~12,027~~	65,414 ~~62,788~~	3,831 ~~3,779~~	88,805 ~~82,421~~	2,589 ~~1,927~~	229 ~~221~~	7,624 ~~6,580~~
Feb.-~~20~~21	283,804 ~~270,093~~	4,006 ~~11,928~~	51,917 ~~54,286~~	3,959 ~~3,903~~	88,805 ~~82,421~~	1,758 ~~1,564~~	234 ~~230~~	7,624 ~~6,580~~
Mar.-~~20~~21	277,989 ~~271,716~~	4,072 ~~12,442~~	54,744 ~~55,140~~	3,974 ~~3,962~~	88,805 ~~82,421~~	2,213 ~~2,092~~	235 ~~238~~	7,624 ~~6,580~~
Apr.-~~20~~21	275,716 ~~251,638~~	4,461 ~~12,764~~	57,510 ~~55,446~~	4,027 ~~3,984~~	88,805 ~~82,421~~	1,739 ~~1,358~~	233 ~~226~~	7,624 ~~6,580~~
May-~~20~~21	195,966 ~~182,090~~	3,417 ~~10,707~~	7,264 ~~12,789~~	3,961 ~~3,864~~	88,805 ~~82,421~~	960 ~~732~~	136 ~~118~~	7,624 ~~6,580~~

The consumption factors established in advance of each Winter Period shall be based on the forecast number of customers by rate schedule. These factors shall be trued-up at the end of the Winter Period for which the factors apply in order to reflect the actual average number of customers by rate schedule.

7. Margin Revenue Factor
- the weighted average of the Distribution Charges as quoted in the individual rate schedules to which this clause applies net of applicable taxes. The weighted average shall be determined by multiplying the margin revenue component of the Distribution Charges of each rate schedule to which this clause applies by each rate schedule's percentage of total consumption of all the rate schedules to which this clause applies for the winter period and summing this result for all the rate schedules to which this clause applies. The Margin Revenue Factors shall be redetermined each time new base rates are put into effect.

Margin Revenue Factors:

Rate Schedule RSG	$0.360706
Rate Schedule GSG	$0.288299
Rate Schedule LVG	$0.041979

8. Annual Period
- shall be the 12 consecutive months from October 1 of one calendar year through September 30 of the following calendar year.

9. Average 13 Month Common Equity Balance
- shall be calculated by adding the Net Gas Utility Plant in Service (Gas Plant in Service, excluding plant held for future use and excluding plant for which the Company receives recovery from clause mechanisms that provide for a return on investment outside of base rates, less Accumulated Depreciation Reserve) less Accumulated Deferred Income Taxes plus working capital associated with Materials and Supplies Inventory and Prepayments at the beginning of the Annual Period (i.e., October 1) and the month ending balances for each of the twelve months in the Annual Period divided by thirteen (13), and multiplying by 54% (the equity percentage of the Company's capital structure).

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 47**
Superseding
B.P.U.N.J. No. 16 GAS **XXX Revised Sheet No. 47**

WEATHER NORMALIZATION CHARGE (Continued)

II. DETERMINATION OF THE WEATHER NORMALIZATION RATE

At the end of the Winter Period during the Annual Period, a calculation shall be made that determines for all months of the Winter Period the level by which margin revenues differed from what would have resulted if normal weather (as determined by reference to the Degree Day Dead Band) occurred. This calculation is made by multiplying the monthly Degree Day Consumption Factor by the difference between Normal Calendar Month Degree Days as adjusted for the Degree Day Dead Band, and Actual Calendar Month Degree Days and, in turn, multiplying the result by the Margin Revenue Factor. To the extent the Actual Calendar Month Degree Days exceeds Normal Calendar Month Degree Days as adjusted for the Degree Day Dead Band, an excess of margin revenues exist. To the extent Actual Calendar Month Degree Days were less than Normal Calendar Month Degree Days as adjusted for the Degree Day Dead Band, a deficiency of marginal revenue exists. The sum of the monthly calculations represents the total revenue excess or deficiency for the Winter Period. If, at the end of the Winter Period of the Annual Period, the degree day variation from normal weather is less than the Degree Day Dead Band, the weather normalization clause will not be in effect.

The WNC shall not operate to permit the Company to recover any portion of a margin revenue deficiency that will cause the Gas Utility to earn in excess of its allowed rate of return on common equity of 9.6% for the Annual Period; any portion which is not recovered shall not be deferred. For purposes of this section, the Gas Utility's rate of return on common equity shall be calculated by dividing the Gas Utility's regulated jurisdictional net income for the Annual Period by the Gas Utility's average 13 month common equity balance for such Annual Period. The Gas Utility's regulated jurisdictional net income shall be calculated by subtracting from total net income of the Gas Utility net income derived from clause mechanisms, currently the Green Programs Recovery Charge, that provide for a return on investment outside of base rates.

The total WNC balance at September 30 of the Annual Period shall be divided by the estimated applicable balancing therm sales from the rate schedules subject to this clause for the Annual Period over which this rate will be in effect, multiplied by a factor to adjust for increases in taxes and assessments. The product of this calculation shall be the Weather Normalization Charge. However, the Weather Normalization Charge will at no time exceed three (3%) percent of the then applicable RSG total per therm rate, including RSG-BGSS charges and ~~72.91~~73.32% of the Balancing Charge. To the extent that the effect of this rate cap precludes the Company from fully recovering the WNC balance for the Annual Period, the unrecovered balance will be added to the WNC balance used to calculate the weather normalization rate for the next Winter Period. The Weather Normalization Charge, so calculated, will be in effect for the immediately following Annual Period.

III. TRACKING THE OPERATION OF THE WEATHER NORMALIZATION CLAUSE

The revenues billed, or credits applied, net of taxes and assessments, through the application of the Weather Normalization Charge shall be accumulated for each month of the Winter Period when this charge is in effect and applied against the margin revenue excess or deficiency from the immediately preceding Winter Period and any cumulative balances remaining from prior Winter Periods.

The annual filing for the adjustment to the weather normalization charge will be filed by July 1 of each year.

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 45**
Superseding
B.P.U.N.J. No. 16 GAS **XXX Revised Sheet No. 45**

WEATHER NORMALIZATION CHARGE

CHARGE APPLICABLE TO RATE SCHEDULES RSG, GSG, LVG (Per Balancing Therm)

	Weather Normalization Charge	Weather Normalization Charge including SUT
October 1, 2020 through May 31, 2021	$0.019308	$0.020587
June 1, 2021 through September 30, 2021	$0.000000	$0.000000

Weather Normalization Charge

This charge shall be applicable to the rate schedules listed above. The weather normalization charge applied in each Winter Period shall be based on the differences between actual and normal weather during the preceding winter period. The weather normalization charge shall be determined as follows:

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1. Degree Days (DD)
- the difference between 65ºF and the mean daily temperature for the day. The mean daily temperature is the simple average of the 24 hourly temperature observations for a day.

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- the accumulation of the actual Degree Days for each day of a calendar month.

3. Normal Calendar Month Degree Days
- the level of calendar month degree days to which this clause applies.

The normal calendar month Degree Days used in this clause will be the twenty-year average of the National Oceanic and Atmospheric Administration (NOAA) First Order Weather Observation Station at the Newark airport and will be updated annually in the Weather Normalization Clause (WNC) proceeding. The base level of normal degree days for the defined winter period months for the 2020-2021 Winter Period are set forth in the table below:

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Dec - 20	829.32
Jan - 21	1,004.41
Feb - 21	838.29
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May - 21	125.01

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	RSG-Residential		Commercial			Industrial		
Month			GSG		LVG	GSG		LVG
	Heating	Non-Heating	Heating	Non-Heating		Heating	Non-Heating	
Oct.-20	157,174	(2,282)	20,172	874	88,054	446	-	7,783
Nov.-20	248,711	3,549	36,363	2,550	88,054	1,166	136	7,783
Dec.-20	247,054	4,468	50,391	3,626	88,054	2,178	196	7,783
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Feb.-21	283,804	4,006	51,917	3,959	88,805	1,758	234	7,624
Mar.-21	277,989	4,072	54,744	3,974	88,805	2,213	235	7,624
Apr.-21	275,716	4,461	57,510	4,027	88,805	1,739	233	7,624
May-21	195,966	3,417	7,264	3,961	88,805	960	136	7,624

The consumption factors established in advance of each Winter Period shall be based on the forecast number of customers by rate schedule. These factors shall be trued-up at the end of the Winter Period for which the factors apply in order to reflect the actual average number of customers by rate schedule.

7. Margin Revenue Factor
- the weighted average of the Distribution Charges as quoted in the individual rate schedules to which this clause applies net of applicable taxes. The weighted average shall be determined by multiplying the margin revenue component of the Distribution Charges of each rate schedule to which this clause applies by each rate schedule's percentage of total consumption of all the rate schedules to which this clause applies for the winter period and summing this result for all the rate schedules to which this clause applies. The Margin Revenue Factors shall be redetermined each time new base rates are put into effect.

Margin Revenue Factors:

Rate Schedule RSG	$0.360706
Rate Schedule GSG	$0.288299
Rate Schedule LVG	$0.041979

8. Annual Period
- shall be the 12 consecutive months from October 1 of one calendar year through September 30 of the following calendar year.

9. Average 13 Month Common Equity Balance
- shall be calculated by adding the Net Gas Utility Plant in Service (Gas Plant in Service, excluding plant held for future use and excluding plant for which the Company receives recovery from clause mechanisms that provide for a return on investment outside of base rates, less Accumulated Depreciation Reserve) less Accumulated Deferred Income Taxes plus working capital associated with Materials and Supplies Inventory and Prepayments at the beginning of the Annual Period (i.e., October 1) and the month ending balances for each of the twelve months in the Annual Period divided by thirteen (13), and multiplying by 54% (the equity percentage of the Company's capital structure).

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 47**
Superseding
B.P.U.N.J. No. 16 GAS **XXX Revised Sheet No. 47**

WEATHER NORMALIZATION CHARGE (Continued)

II. DETERMINATION OF THE WEATHER NORMALIZATION RATE

At the end of the Winter Period during the Annual Period, a calculation shall be made that determines for all months of the Winter Period the level by which margin revenues differed from what would have resulted if normal weather (as determined by reference to the Degree Day Dead Band) occurred. This calculation is made by multiplying the monthly Degree Day Consumption Factor by the difference between Normal Calendar Month Degree Days as adjusted for the Degree Day Dead Band, and Actual Calendar Month Degree Days and, in turn, multiplying the result by the Margin Revenue Factor. To the extent the Actual Calendar Month Degree Days exceeds Normal Calendar Month Degree Days as adjusted for the Degree Day Dead Band, an excess of margin revenues exist. To the extent Actual Calendar Month Degree Days were less than Normal Calendar Month Degree Days as adjusted for the Degree Day Dead Band, a deficiency of marginal revenue exists. The sum of the monthly calculations represents the total revenue excess or deficiency for the Winter Period. If, at the end of the Winter Period of the Annual Period, the degree day variation from normal weather is less than the Degree Day Dead Band, the weather normalization clause will not be in effect.

The WNC shall not operate to permit the Company to recover any portion of a margin revenue deficiency that will cause the Gas Utility to earn in excess of its allowed rate of return on common equity of 9.6% for the Annual Period; any portion which is not recovered shall not be deferred. For purposes of this section, the Gas Utility's rate of return on common equity shall be calculated by dividing the Gas Utility's regulated jurisdictional net income for the Annual Period by the Gas Utility's average 13 month common equity balance for such Annual Period. The Gas Utility's regulated jurisdictional net income shall be calculated by subtracting from total net income of the Gas Utility net income derived from clause mechanisms, currently the Green Programs Recovery Charge, that provide for a return on investment outside of base rates.

The total WNC balance at September 30 of the Annual Period shall be divided by the estimated applicable balancing therm sales from the rate schedules subject to this clause for the Annual Period over which this rate will be in effect, multiplied by a factor to adjust for increases in taxes and assessments. The product of this calculation shall be the Weather Normalization Charge. However, the Weather Normalization Charge will at no time exceed three (3%) percent of the then applicable RSG total per therm rate, including RSG-BGSS charges and 73.32% of the Balancing Charge. To the extent that the effect of this rate cap precludes the Company from fully recovering the WNC balance for the Annual Period, the unrecovered balance will be added to the WNC balance used to calculate the weather normalization rate for the next Winter Period. The Weather Normalization Charge, so calculated, will be in effect for the immediately following Annual Period.

III. TRACKING THE OPERATION OF THE WEATHER NORMALIZATION CLAUSE

The revenues billed, or credits applied, net of taxes and assessments, through the application of the Weather Normalization Charge shall be accumulated for each month of the Winter Period when this charge is in effect and applied against the margin revenue excess or deficiency from the immediately preceding Winter Period and any cumulative balances remaining from prior Winter Periods.

The annual filing for the adjustment to the weather normalization charge will be filed by July 1 of each year.

TYPICAL RESIDENTIAL GAS BILL IMPACTS

The effect of the proposed changes in the Weather Normalization Charge (WNC) on typical residential gas bills, if approved by the Board, is illustrated below:

Residential Gas Service					
If Your Monthly Winter Therm Use Is:	And Your Annual Therm Use Is:	Then Your Present Annual Bill (1) Would Be:	And Your Proposed Annual Bill (2) Would Be:	Your Annual Bill Change Would Be:	And Your Percent Change Would Be:
25	170	$226.56	$228.76	$2.20	0.97%
50	340	349.60	354.00	4.40	1.26
100	610	554.26	564.68	10.42	1.88
159	1,000	847.79	866.37	18.58	2.19
172	1,040	871.88	889.66	17.78	2.04
200	1,210	997.28	1,017.90	20.62	2.07
300	1,816	1,445.04	1,475.98	30.94	2.14

(1) Based upon Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect June 1, 2020 (with WNC set at the rate that was in effect for the 2019-2020 Annual Period) and assumes that the customer receives commodity service from Public Service.
(2) Same as (1) except includes the proposed Weather Normalization Charge proposed to be in effect for the 2020-2021 Annual Period.

Residential Gas Service					
If Your Annual Therm Use Is:	And Your Monthly Winter Therm Use Is:	Then Your Present Monthly Winter Bill (3) Would Be:	And Your Proposed Monthly Winter Bill (4) Would Be:	Your Monthly Winter Bill Change Would Be:	And Your Percent Change Would Be:
170	25	$27.23	$27.69	$0.46	1.69%
340	50	45.83	46.75	0.92	2.01
610	100	84.07	86.20	2.13	2.53
1,040	172	138.39	142.06	3.67	2.65
1,210	200	159.49	163.76	4.27	2.68
1,816	300	234.94	241.34	6.40	2.72

(3) Based upon Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect June 1, 2020 (with WNC set at the rate that was in effect for the 2019-2020 Annual Period) and assumes that the customer receives commodity service from Public Service.
(4) Same as (3) except includes proposed Weather Normalization Charge proposed to be in effect for the 2020-2021 Annual Period.

NOTICE TO PUBLIC SERVICE ELECTRIC AND GAS COMPANY GAS CUSTOMERS

IN THE MATTER OF THE PETITION OF PUBLIC SERVICE ELECTRIC AND GAS COMPANY TO REVISE ITS WEATHER NORMALIZATION CHARGE FOR THE 2020-2021 ANNUAL PERIOD

Notice of Filing and Notice of Public Hearings

Docket No. XXXXXXXXXX

TAKE NOTICE that on June 29, 2020, Public Service Electric and Gas Company ("Public Service", "the Company") filed a Petition with the New Jersey Board of Public Utilities ("Board", "BPU") seeking approval of its Weather Normalization Charge ("WNC") for the Annual Period of October 1, 2020 to September 30, 2021 ("2020-2021 Annual Period") applicable to gas customers receiving service under Rate Schedules Residential Service ("RSG"), General Service ("GSG") and Large Volume Gas ("LVG").

The WNC mechanism was approved by the Board on July 9, 2010, in Dkt. No. GR09050422. As approved by the Board, the WNC operates to allow the Company to increase its rates to compensate for lower revenues it receives from customers as a result of warmer-than-normal winters, and to decrease rates to make up for higher revenues it receives as a result of colder-than-normal winters. The Company has requested to set its WNC rate to $0.020587 (including New Jersey Sales and Use Tax) per balancing therm for the 2020-2021 winter period, effective October 1, 2020.

The approximate effect of the proposed changes on typical gas residential monthly bills, if approved by the Board, is illustrated in Table #1.

Under the Company's proposal, a residential heating customer using 100 therms per month during the winter months and 610 therms on an annual basis would see an increase in the annual bill from $554.26 to $564.68, or $10.42 or approximately 1.88%. Moreover, under the Company's proposal, a typical residential heating customer using 172 therms per month during the winter months and 1,040 therms on an annual basis would see an increase in the annual bill from $871.88 to $889.66 or $17.78 approximately 2.04%. The Statewide average residential gas customer using 1,000 therms on an annual basis would see an increase in the annual bill from $847.79 to $866.37 or $18.58 or approximately 2.19%.

The Board has the statutory authority to establish the WNC rate at levels it finds just and reasonable. Therefore, the Board may establish the WNC rate at levels other than those proposed by Public Service. Therefore, the described charges may increase or decrease based upon the Board's decision.

A copy of the Company's filing is available for review online at the PSEG website at http://www.pseg.com/pseandgfilings.

The following dates, times and locations for public hearings have been scheduled on the Company's filing so that members of the public may present their views. Information provided at the public hearings will become part of the record of this case and will be considered by the Board in making its decision.

Date 1, 2020	Date 2, 2020	Date 3, 2020
Time 1	Time 2	Time 3
Location 1	Location 2	Location 3
Location 1 Overflow	Location 2 Overflow	Location 3 Overflow
Room 1	Room 2	Room 3
Room 1 Overflow	Room 2 Overflow	Room 3 Overflow
Address 1	Address 2	Address 3
City 1, New Jersey Zip 1	City 2, New Jersey Zip 2	City 3, New Jersey Zip 3

In order to encourage full participation in this opportunity for public comment, please submit any requests for needed accommodations, such as interpreters, listening devices or mobility assistance, 48 hours prior to the above hearings to the Board's Secretary at board.secretary@bpu.nj.gov.

Members of the public may also submit written and/or emailed comments. Although both will be given equal consideration, the preferred method of transmittal is via email to ensure timely receipt while we continue to work remotely due to the COVID-19 pandemic. Written comments may be submitted to the Board

Secretary at 44 South Clinton Avenue, 9th Floor, P.O. Box 350, Trenton, New Jersey, 08625-0350. Email comments should be submitted to board.secretary@bpu.nj.gov. Written and/or emailed comments should reference the name of the petition and the above docket number in the subject line. Written and/or emailed comments will be provided the same weight as statements made at the hearings.

Table # 1
Residential Gas Service

If Your Annual Therm Use Is:	And Your Monthly Winter Therm Use Is:	Then Your Present Monthly Winter Bill (1) Would Be:	And Your Proposed Monthly Winter Bill (2) Would Be:	Your Monthly Winter Bill Change Would Be:	And Your Monthly Percent Change Would Be:
170	25	$27.23	$27.69	$0.46	1.69%
340	50	45.83	46.75	0.92	2.01
610	100	84.07	86.20	2.13	2.53
1,040	172	138.39	142.06	3.67	2.65
1,210	200	159.49	163.76	4.27	2.68
1,816	300	234.94	241.34	6.40	2.72

(1) Based upon Delivery Rates and Basic Gas Supply Service (BGSS-RSG) in effect June 1, 2020 (with WNC set at the 2020-2021 winter period rate) and assumes that the customer receives BGSS-RSG commodity service from Public Service.
(2) Same as (1) except includes the proposed Weather Normalization Charge to be in effect for 2020-2021 Annual Period.

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY