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June 29, 2017

In The Matter of the Petition of
Public Service Electric and Gas Company
to Revise its Weather Normalization Charge
for the 2017-2018 Annual Period

BPU Docket No. _____

VIA BPU E-FILING SYSTEM & OVERNIGHT MAIL

Irene Kim Asbury, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 3rd Floor, Suite 314
P.O. Box 350
Trenton, New Jersey 08625-0350

Dear Secretary Asbury:

Public Service Electric and Gas Company (PSE&G) submits its Petition, Testimony and Supporting Schedules in the above-referenced proceeding on the Board of Public Utilities E-Filing system.

Very truly yours,

Matthew 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 2017-2018 ANNUAL PERIOD	)))))	PETITION BPU Docket No._____

Public Service Electric and Gas Company (PSE&G, the 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, 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 6 million persons and which 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 $54,738,895, of which $31,882,242 will be recovered over the 2017-2018 Winter Period with the remaining deficiency of $22,856,653 to be recovered over the 2018-2019 Winter Period. The Weather Normalization Charge (WNC) will be collected from PSE&G gas customers receiving service under Rate Schedules Residential Service (RSG), General Service (GSG) and Large Volume Gas (LVG) during the 2017-2018 and 2018-2019 Winter Periods (October 1 – May 31).

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 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) (the July 2010 Order).

5. The WNC Tariff requires PSE&G to calculate, at the end of each October-to-May period (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 2016-2017 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 2016-2017 Winter Period Degree Day Consumption Factors.

7. In addition, the revised WNC Tariff Sheets (Attachment 4) reflect updated Degree Day Consumption Factors for the 2017-2018 Winter Period.

8. Actual heating degree days for the 2016-2017 Winter Period were 341.6 degree days fewer than the normal heating degree days (adjusted for a ½% dead band). See Attachment 1, Schedule SAW-WNC-2. The 341.6 heating degree day fewer from the normal degree day total results in a margin revenue under recovery of $30,843,325. See Attachment 1, Schedule SAW-WNC-2.

9. PSE&G has made two adjustments to the margin revenue deficiency to calculate the 2017-2018 WNC recovery request in accordance with the WNC Tariff, and as described in the Testimony of Donna M. Powell, Assistant Controller, (Attachment 2) and the Testimony of Stephen Swetz, Senior Director, (Attachment 3), PSE&G as follows:

a. In Docket No. GR16070617, the Board approved the collection of $53,745,674 through the WNC of which $33,156,456 was to be collected from October 1, 2016 through May 31, 2017. Due to the warmer than normal 2016-2017 winter weather, customer volumes were lower than anticipated, which resulted in a shortfall of the 2016-2017 Winter Period collections. The Company collected $29,850,104 resulting in a balance of $23,895,570 to be collected from customers. Please refer to Attachment 2, Schedule DMP-WNC-3 for a schedule of the monthly collection of the prior years' WNC excess margin deficiency during the 2015-2016 Winter Period.

b. Second, the total WNC balance to be collected was further adjusted in its calculation of the WNC to ensure that it does not exceed three percent of the RSG total per therm rate, including RSG-BGSS charges and 63.54% of the Balancing Charge. This adjustment further reduces the WNC deficiency to $31,882,242. (See Attachment 3, Schedule SS-WNC-2). The remaining deficiency of $ $22,856,653 is anticipated to be recovered in the 2018-2019 Winter Period.

10. Based on the Board-approved method for calculating the WNC, the Company respectfully requests approval to recover the $54,738,895 uncollected balance,

of which $31,882,242 would be recovered during the 2017-2018 Winter Period. (See Attachment 2, Schedule DMP-WNC-4).

11. In order to recover this under collection, PSE&G proposes a WNC of $0.021647 without New Jersey Sales and Use Tax (SUT) ($0.023135 including SUT) per Balancing Therm. For the supporting calculation, see Attachment 3, Testimony of Stephen Swetz.

12. As a result of the proposed WNC for 2017-2018 WNC Winter Period, as described in the testimony of Stephen Swetz, PSE&G's typical residential gas heating customers using 165 therms in a winter month and 1,010 therms annually would experience a decrease in their annual bill from $861.02 to $860.27 or $0.75 or approximately 0.09%, based upon Delivery Rates and BGSS-RSG charges in effect on June 1, 2017, with the WNC set to the rate that was in effect for the 2016-2017 Annual Period, and assuming that the customer receives commodity service from PSE&G.

13. 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 2017-2018 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 2016-2017 margin revenue deferral and adjustment to the WNC balance supporting the proposed 2017-2018 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 2017-2018 Winter Period and collected from the Company's RSG, GSG and LVG customers.

d. Proposed B.P.U.N.J. No. 15 Gas Tariff Sheets Nos. 45, 46 and 47 in clean and redlined form (Attachment 4) to become effective on October 1, 2017.

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

14. Notice of this filing and two copies of the Petition will be served upon the Department of Law and Public Safety, 124 Halsey Street, P.O. Box 45029, Newark, New Jersey 07101 and upon the Director, Division of Rate Counsel, 140 East Front Street, 4th

Floor, Trenton, New Jersey 08625. Copies of the Petition and supporting testimony and attachments will also be sent to the persons identified on the service list provided with this filing.

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 collect $54,738,895, of which $31,882,242 (without SUT) will be recovered over the 2017-2018 Winter Period with the remaining deficiency of $22,856,653 to be recovered over the 2018-2019 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. 15, Gas Service, referred to herein as in Attachment 4, are just and reasonable.

3. Authorizing PSE&G to implement the rates proposed herein on or about October 1, 2017.

Respectfully submitted,

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

Matthew M. Weissman, Esq.
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DATED: June 29, 2017
Newark, New Jersey

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 Public Service Electric and Gas (PSE&G or the Company).

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 2016-2017 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 2017-2018 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 2016-2017 Winter Period to the normal calendar month degree days. It also presents the calculation of the deficiency in WNC margin revenues for the 2016/2017 Winter Period.

(3) Schedule SAW-WNC-3 presents the calculation of the average daily usage of gas for the June 2017-September 2017 period used in the calculation of forecasted balancing therms.

(4) Schedule SAW-WNC-4 summarizes the gas calendar-month sales forecast for the November 2017 – March 2018 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 2017-September 2018 period.

(6) Schedule SAW-WNC-6 presents the development of the proposed WNC monthly Degree Day Consumption Factors to be used for the 2017-2018 Winter Period.

(7) Schedule SAW-WNC-7 contains the updated base level of normal degree days for the 2017-2018 Winter Period based on the 20 year period ending December 2016.

(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% 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 2016-2017 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 embodied in 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 2016-2017 Winter Period and the normal calendar-month heating degree days?

A. For the 2016-2017 Winter Period, the actual heating degree days were 348.27 less than the normal heating degree days. The WNC requires that the heating

degree day monthly variances must be adjusted for the ½% deadband in which the WNC is operable. After this adjustment, the cumulative actual heating degree days were 341.55 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 727.71 heating degree days shortfall from the normal degree day total results in a margin revenue deficiency of $30,843,325. 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, 2017. A summary of the forecast of normalized gas sales for the five month period of November 2016 through March 2017 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 New Jersey's Energy Master Plan. The forecast models and the methodology employed are described in more 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 2017 through September 2017 from the total delivered calendar-month sales for the months of November 2017 through March 2018. 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. 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 2017-2018 Winter Period?

A. The projected balancing therms are estimated to be 63.54 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 2017-2018 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 2017-2018 Winter Period have been calculated based on the 20-year period ending December 2016 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-16	1,348,581	1,350,341	1.0013052	100,265	100,396	296,999	297,225	1.0007609	2,673	2,675
Nov-16	1,357,915	1,359,238	1.0009744	190,882	191,068	298,720	299,360	1.0021425	8,649	8,668
Dec-16	1,349,653	1,364,777	1.0112059	239,811	242,498	296,753	297,542	1.0026588	11,798	11,829
Jan-17	1,348,944	1,361,254	1.0091258	233,722	235,855	295,075	298,246	1.0107464	11,237	11,358
Feb-17	1,346,389	1,356,853	1.0077720	236,933	238,774	294,731	296,233	1.0050962	11,359	11,417
Mar-17	1,352,002	1,368,468	1.0121791	230,820	233,631	294,799	297,441	1.0089620	11,757	11,862
Apr-17	1,358,871	1,370,556	1.0085992	206,269	208,043	296,751	296,211	0.9981803	12,110	12,088
May-17	1,356,409	1,371,093	1.0108258	159,370	161,095	295,539	296,376	1.0028321	9,516	9,543

SCHEDULE SAW-WNC-2

Margin Revenue Deficiency/Surplus Calculation 2015-2016 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-16	100,396	2,675	19,191	1,362	80,283	552	-	6,492	252.28	223.17	1.26	27.85
Nov-16	191,068	8,668	58,910	2,643	80,283	1,081	118	6,492	526.39	460.06	2.63	63.70
Dec-16	242,498	11,829	48,256	3,467	80,283	1,337	177	6,492	815.24	843.92	4.08	-24.60
Jan-17	235,855	11,358	55,580	3,774	80,741	2,057	218	6,474	1005.70	844.29	5.03	156.38
Feb-17	238,774	11,417	58,053	3,917	80,741	1,638	227	6,474	843.19	667.71	4.22	171.26
Mar-17	233,631	11,862	51,713	3,851	80,741	2,206	236	6,474	697.87	787.07	3.49	-85.71
Apr-17	208,043	12,088	39,255	3,903	80,741	1,282	208	6,474	358.62	278.50	1.79	78.33
May-17	161,095	9,543	24,602	4,258	80,741	683	143	6,474	127.53	173.83	0.64	-45.66
Total									4,626.82	4,278.55	23.14	341.55

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-16	2,796,029	74,499	534,469	37,932	2,235,882	15,373	-	180,802	$ 0.302791	$ 0.249100	$ 0.040142
Nov-16	12,171,032	552,152	3,752,567	168,359	5,114,027	68,860	7,517	413,540	$ 0.302791	$ 0.249100	$ 0.040142
Dec-16	(5,965,451)	(290,993)	(1,187,098)	(85,288)	(1,974,962)	(32,890)	(4,354)	(159,703)	$ 0.302791	$ 0.249100	$ 0.040142
Jan-17	36,883,005	1,776,164	8,691,600	590,178	12,626,278	321,674	34,091	1,012,404	$ 0.307818	$ 0.251844	$ 0.040814
Feb-17	40,892,435	1,955,275	9,942,157	670,825	13,827,704	280,524	38,876	1,108,737	$ 0.307818	$ 0.251844	$ 0.040814
Mar-17	(20,024,513)	(1,016,692)	(4,432,321)	(330,069)	(6,920,311)	(189,076)	(20,228)	(554,887)	$ 0.307818	$ 0.251844	$ 0.040814
Apr-17	16,296,008	946,853	3,074,844	305,722	6,324,443	100,419	16,293	507,108	$ 0.307818	$ 0.251844	$ 0.040814
May-17	(7,355,598)	(435,733)	(1,123,327)	(194,420)	(3,686,634)	(31,186)	(6,529)	(295,603)	$ 0.307818	$ 0.251844	$ 0.040814
Total	75,692,947	3,561,524	19,252,892	1,163,239	27,546,425	533,697	65,665	2,212,400			

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-16	$ 846,612	$ 22,558	$ 133,136	$ 9,449	$ 89,753	$ 3,829	$ -	$ 7,258	$ 869,170	$ 146,415	$ 97,011	$ 1,112,595
Nov-16	$ 3,685,279	$ 167,187	$ 934,764	$ 41,938	$ 205,287	$ 17,153	$ 1,872	$ 16,600	$ 3,852,465	$ 995,728	$ 221,888	$ 5,070,081
Dec-16	$ (1,806,285)	$ (88,110)	$ (295,706)	$ (21,245)	$ (79,279)	$ (8,193)	$ (1,085)	$ (6,411)	$ (1,894,395)	$ (326,229)	$ (85,690)	$ (2,306,314)
Jan-17	$ 11,353,253	$ 546,735	$ 2,188,927	$ 148,633	$ 515,329	$ 81,012	$ 8,586	$ 41,320	$ 11,899,988	$ 2,427,157	$ 556,649	$ 14,883,795
Feb-17	$ 12,587,428	$ 601,869	$ 2,503,873	$ 168,943	$ 564,364	$ 70,648	$ 9,791	$ 45,252	$ 13,189,297	$ 2,753,255	$ 609,616	$ 16,552,167
Mar-17	$ (6,163,906)	$ (312,956)	$ (1,116,254)	$ (83,126)	$ (282,446)	$ (47,618)	$ (5,094)	$ (22,647)	$ (6,476,862)	$ (1,252,091)	$ (305,093)	$ (8,034,046)
Apr-17	$ 5,016,205	$ 291,458	$ 774,381	$ 76,994	$ 258,126	$ 25,290	$ 4,103	$ 20,697	$ 5,307,663	$ 880,768	$ 278,823	$ 6,467,254
May-17	$ (2,264,185)	$ (134,127)	$ (282,903)	$ (48,964)	$ (150,466)	$ (7,854)	$ (1,644)	$ (12,065)	$ (2,398,312)	$ (341,365)	$ (162,531)	$ (2,902,208)
Total	$ 23,254,400	$ 1,094,614	$ 4,840,219	$ 292,623	$ 1,120,668	$ 134,268	$ 16,529	$ 90,005	$ 24,349,014	$ 5,283,638	$ 1,210,673	$ 30,843,325

SCHEDULE SAW-WNC-3

Calculation of Forecasted June 2016-September 2016 Average Daily Usage

Class	Rate	Group	Billed Therm Sales					Therms per Day
			June-17	July-17	August-17	September-17	Total	
Residential	**RSG**	**Heating**	38,903,939	32,229,204	27,598,298	28,487,381	127,218,822	1,046,863
		Non-Heating	4,526,944	3,741,555	3,107,860	3,002,487	14,378,846	118,321
Commercial	**GSG**	**Heating**	6,105,371	5,003,160	4,484,687	5,206,061	20,799,279	171,154
		Non-Heating	2,444,654	2,134,107	1,733,834	1,876,897	8,189,492	67,390
	LVG		24,545,006	22,046,584	20,089,549	21,906,209	88,587,348	728,971
Industrial	**GSG**	**Heating**	167,695	89,211	88,178	121,970	467,054	3,843
		Non-Heating	61,200	57,895	42,167	41,041	202,303	1,665
	LVG		4,540,764	3,868,668	3,489,539	3,974,795	15,873,766	130,623
Average Billing-Month Days			30.67	30.76	29.38	30.71	121.5238	

SCHEDULE SAW-WNC-4

Balancing Therm Use Calculation, November 2017 - March 2018
(therms)

Class	Rate	Group	Category	November-17	December-17	January-18	February-18	March-18	October-17 September-18
Residential	**RSG**	**Heating**	**Delivered Sales**	145,811,019	230,532,811	262,387,862	235,485,800	203,736,342	1,077,953,834
			less: **Jun-Sep Ave x Days**	31,455,741	33,549,467	33,399,915	31,206,488	31,854,546	
			equals: **Balancing Use**	114,355,278	196,983,344	228,987,947	204,279,312	171,881,796	916,487,679
		Non-Heating	**Delivered Sales**	8,583,797	13,655,959	15,178,489	12,804,912	12,301,074	93,672,478
			less: **Jun-Sep Ave x Days**	3,555,264	3,791,906	3,775,003	3,527,093	3,600,339	
			equals: **Balancing Use**	5,028,533	9,864,053	11,403,486	9,277,819	8,700,735	44,274,625
Commercial	**GSG**	**Heating**	**Delivered Sales**	18,155,629	36,697,274	47,678,040	37,215,254	32,542,953	232,795,609
			less: **Jun-Sep Ave x Days**	5,142,770	5,485,078	5,460,628	5,102,019	5,207,972	
			equals: **Balancing Use**	13,012,859	31,212,196	42,217,412	32,113,235	27,334,981	145,890,683
		Non-Heating	**Delivered Sales**	3,315,512	5,117,439	5,737,610	4,946,539	5,075,059	41,126,376
			less: **Jun-Sep Ave x Days**	2,024,909	2,159,689	2,150,062	2,008,864	2,050,581	
			equals: **Balancing Use**	1,290,603	2,957,750	3,587,548	2,937,675	3,024,478	13,798,054
	LVG		**Delivered Sales**	60,703,376	87,144,946	102,233,552	87,490,010	95,272,096	648,384,976
			less: **Jun-Sep Ave x Days**	21,903,843	23,361,785	23,257,646	21,730,278	22,181,546	
			equals: **Balancing Use**	38,799,533	63,783,161	78,975,906	65,759,732	73,090,550	320,408,881
Industrial	**GSG**	**Heating**	**Delivered Sales**	779,480	1,344,521	2,082,543	1,741,164	1,310,829	9,145,954
			less: **Jun-Sep Ave x Days**	115,473	123,159	122,610	114,558	116,937	
			equals: **Balancing Use**	664,007	1,221,362	1,959,933	1,626,606	1,193,892	6,665,800
		Non-Heating	**Delivered Sales**	122,234	237,248	264,789	236,944	231,385	1,581,968
			less: **Jun-Sep Ave x Days**	50,029	53,359	53,121	49,633	50,664	
			equals: **Balancing Use**	72,205	183,889	211,668	187,311	180,721	835,794
	LVG		**Delivered Sales**	6,809,587	8,923,852	9,620,097	9,275,205	9,981,758	75,993,899
			less: **Jun-Sep Ave x Days**	3,924,910	4,186,156	4,167,496	3,893,809	3,974,671	
			equals: **Balancing Use**	2,884,677	4,737,696	5,452,601	5,381,396	6,007,087	24,463,456
Total			**Delivered Sales**	244,280,634	383,654,050	445,182,982	389,195,828	360,451,496	2,520,999,831
			less: **Jun-Sep Ave x Days**	68,172,940	72,710,600	72,386,481	67,632,742	69,037,256	-
			equals: **Balancing Use**	176,107,694	310,943,450	372,796,501	321,563,086	291,414,240	1,472,824,972

RSG Balancing Therm Share of Delivered Sales Calculation, October 2017-September 2018
(therms)

Rate	Class	Group	Category	October-17	November-17	December-17	January-18	February-18	March-18	April-18	May-18	June-18	July-18	August-18	September-18	Total	Balancing Delivered (percent)
RSG	Residential	Heating	Balancing Use	-	114,355,278	196,983,344	228,987,947	204,279,312	171,881,796	-	-	-	-	-	-	916,487,679	
			Delivered Sales	66,698,025	145,811,019	230,532,811	262,387,862	235,485,800	203,736,342	97,580,269	57,202,059	33,175,889	29,997,165	28,097,692	27,593,637	1,418,298,570	
		Non-Heating	Balancing Use	-	5,028,533	9,864,053	11,403,486	9,277,819	8,700,735	-	-	-	-	-	-	44,274,625	
			Delivered Sales	4,711,860	8,583,797	13,655,959	15,178,489	12,804,912	12,301,074	8,357,245	4,337,900	4,095,557	3,789,986	3,070,751	2,784,946	93,672,476	
		Total	Balancing Use	-	119,383,811	206,847,397	240,391,433	213,557,132	180,582,531	-	-	-	-	-	-	960,762,304	63.54%
			Delivered Sales	71,409,885	154,394,816	244,188,770	277,566,351	248,290,712	216,037,416	105,937,514	61,539,959	37,271,446	33,787,151	31,168,443	30,378,583	1,511,971,046	

Degree Day Consumption Factor Calculation

RSG Heating

Month	HDD	Post-2008	HDDxWage Coefficient	HDD x Price Coefficient	Value		Customers	Degree Day Consumption Factor
					Real Price	Wage		
Oct-17		-0.00698	0.001332		0.6892	63.5760	1,376,153	106,936
Nov-17		-0.00698	0.002353		0.6892	63.5760	1,374,003	195,957
Dec-17		-0.00698	0.003061	-0.01333	0.6892	63.5760	1,370,033	244,471
Jan-18	0.17927	-0.00698		0.00000	0.7108	64.8300	1,367,896	235,679
Feb-18	0.18423	-0.00698		-0.00233	0.7108	64.8300	1,369,503	240,480
Mar-18	0.17947	-0.00698			0.7108	64.8300	1,359,827	234,561
Apr-18	0.15952	-0.00698			0.7108	64.8300	1,380,288	210,553
May-18	0.12687	-0.00698			0.7108	64.8300	1,374,127	164,748

RSG Non-Heating

HDD	HDD x Price Coefficient	Value		Customers	Degree Day Consumption Factor
		Real Price	Wage		
0.0096		0.7853		299,161	2,872
0.0394	-0.0134	0.7853		298,247	8,613
0.0560	-0.0205	0.7853		296,344	11,825
0.0559	-0.0203	0.7940		295,553	11,758
0.0549	-0.0195	0.7940		295,023	11,629
0.0583	-0.0206	0.7940		292,117	12,252
0.0621	-0.0208	0.7940		297,440	13,559
0.0337		0.7940		295,581	9,961

	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-17				12.0612	3,265	39,384	1,295	1,295
Nov-17				8.0477	3,265	26,279	2,609	2,609
Dec-17				12.9654	3,265	42,337	3,494	3,494
Jan-18		(5,805)	0.7844	18.7708	3,282	57,050	3,782	3,782
Feb-18		(4,105)	0.7844	17.6714	3,282	54,776	3,874	3,874
Mar-18		(894)	0.7844	16.6468	3,282	53,931	3,933	3,933
Apr-18		(23,112)	0.7844	18.7830	3,282	43,515	4,109	4,109
May-18				7.8528	3,282	25,772	4,446	4,446

	Industrial GSG Heating			Industrial GSG Non-Heating	
Month	HDDxMfg		Degree Day Consumption Factor	HDD	Degree Day Consumption Factor
	Coefficient	Value			
Oct-17	2.22	245.93	545		
Nov-17	4.37	245.93	1075	115.37	115
Dec-17	5.83	245.93	1434	182.78	183
Jan-18	8.28	246.2	2039	214.27	214
Feb-18	6.65	246.2	1638	222.49	222
Mar-18	8.97	246.2	2207	237.87	238
Apr-18	5.46	246.2	1344	219.36	219
May-18	2.88	246.2	710	166.63	167

	Commercial LVG			Industrial LVG				
Month	HDDxCust		Degree Day Consumption Factor	HDDxMfg		HDDxTime		Degree Day Consumption Factor
	Coefficient	Value		Coefficient	Value	Coefficient	Value	
Oct-17	25.06921	3265.38	81,860	27.5708	245.93	-6.446	17	6,671
Nov-17	25.06921	3265.38	81,860	27.5708	245.93	-6.446	17	6,671
Dec-17	25.06921	3265.38	81,860	27.5708	245.93	-6.446	17	6,671
Jan-18	25.06921	3281.89	82,274	27.5708	246.20	-6.446	18	6,672
Feb-18	25.06921	3281.89	82,274	27.5708	246.20	-6.446	18	6,672
Mar-18	25.06921	3281.89	82,274	27.5708	246.20	-6.446	18	6,672
Apr-18	25.06921	3281.89	82,274	27.5708	246.20	-6.446	18	6,672
May-18	25.06921	3281.89	82,274	27.5708	246.20	-6.446	18	6,672

SCHEDULE SAW-WNC-7

Normal Monthly Weather
(1997-2016 Average)

Calendar Month	Degree Days
October-17	249.24
November-17	514.57
December-17	819.31
January-18	999.69
February-18	838.55
March-18	682.31
April-18	357.52
May-18	126.62

Natural Gas Sales Forecast Methodology-

2017

Public Service Electric & Gas Company

Finance Department

Electric and Gas Sales and Revenue Forecasting Group

May 2017

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 2017 gas sales forecast completed in May 2016 and the maximum daily sendout forecast completed in April 2017. 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 are 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 the 2005-2015 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, it's impact is relatively small.

Figure 1

RSG Space Heating Model
Actual vs. Fitted Values

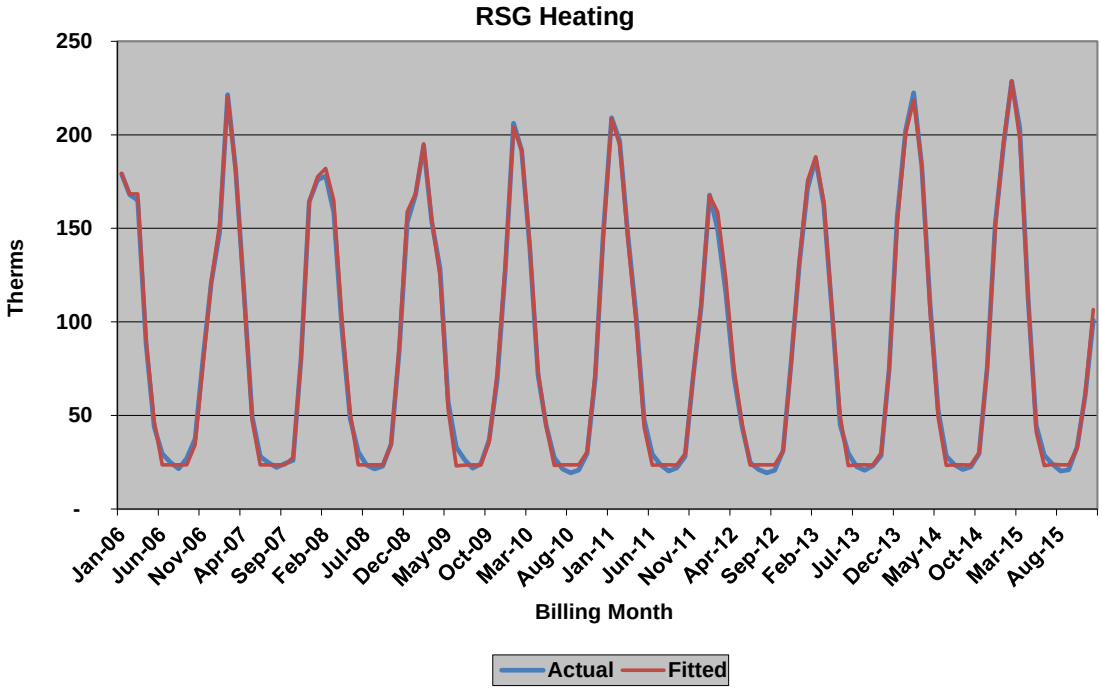
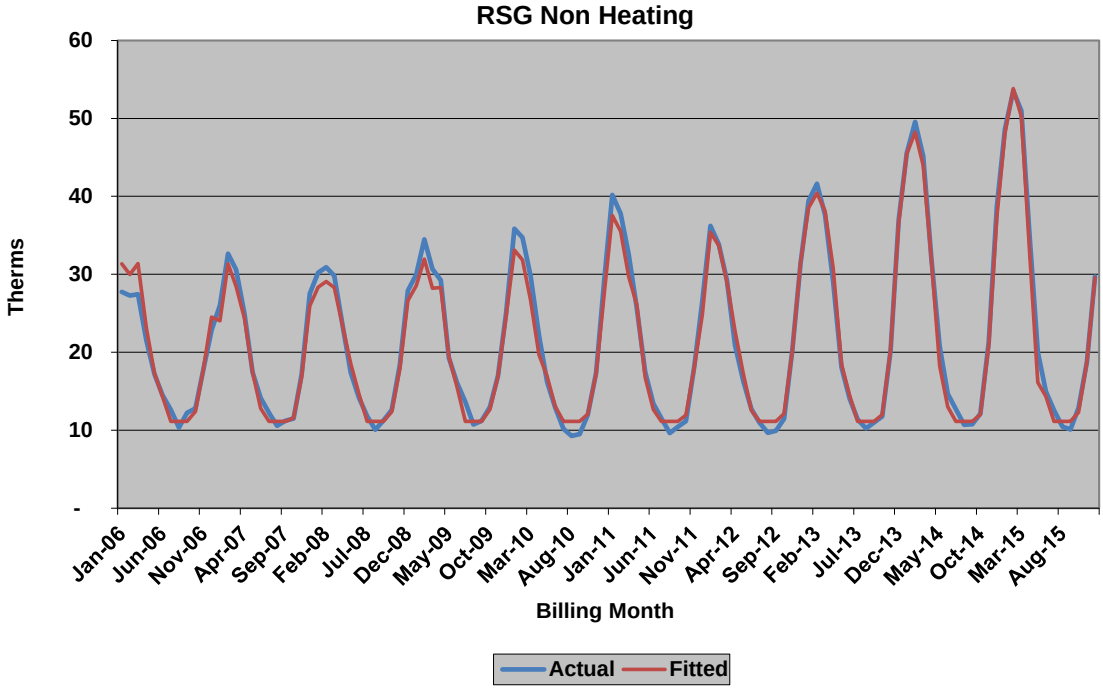


Figure 2

RSG Non-Space Heating Model
Actual vs. Fitted Values



The price elasticity estimates were estimated to be -0.0074 and -0.22 for space heating and non-space heating customers, respectively which is lower than recent estimates but consistent with lower gas prices and the lack of a surge in consumption in response to them. The higher 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	0.17927 (0.002)	0.18423 (0.006)	0.17947 (0.002)	0.15952 (0.003)	0.12687 (0.006)					0.998	1.249	120
PRICE x HDD		-0.00233 (0.004)							-0.01333 (0.007)			
WAGE x HDD							0.001332 (0.0002)	0.002353 (0.0001)	0.003061 (0.0001)			
I-POWER	-0.00698 (0.001)											
NON-HEATING												
HDD	0.05593 (0.0035)	0.05493 (0.0031)	0.05825 (0.0036)	0.06206 (0.0065)	0.03368 (0.0036)	0.06759 (0.0161)	0.00956 (0.0070)	0.03944 (0.0093)	0.05597 (0.0048)	0.970	0.606	120
PRICE x HDD	-0.020 (0.0024)	-0.020 (0.0021)	-0.021 (0.0025)	-0.021 (0.0043)				-0.013 (0.0061)	-0.020 (0.0031)			

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]

This model was estimated for customers in the commercial sector using monthly billing data from the 2005-2015 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. 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,
$\overline{HDD}$	= 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 -0.10 the non-space heating customers and the large LVG, customers are not. 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

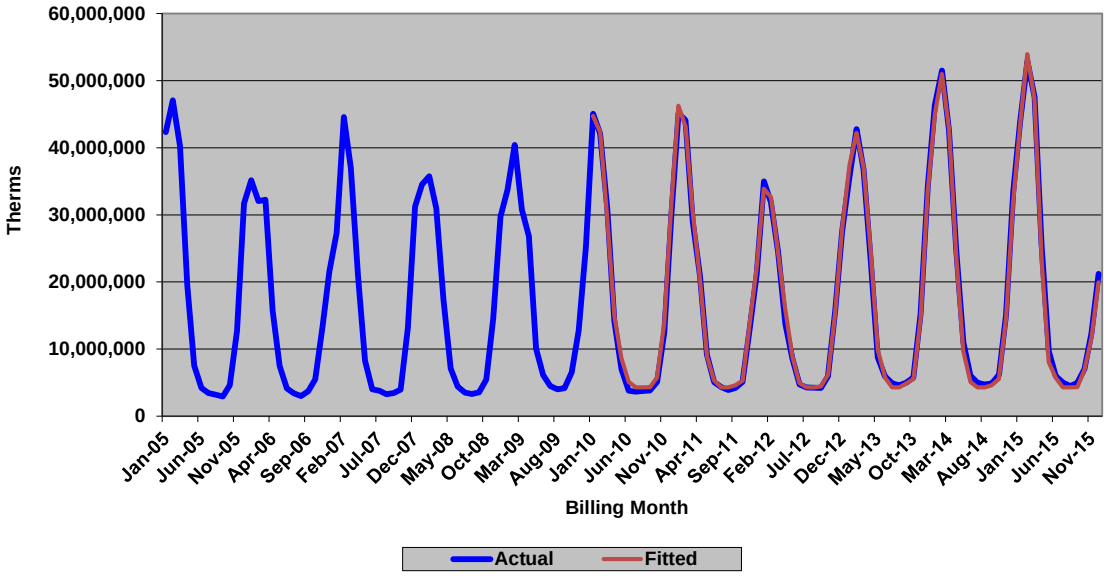


Figure 4
GSG Commercial Non-Space Heating Model
Actual vs. Fitted Values

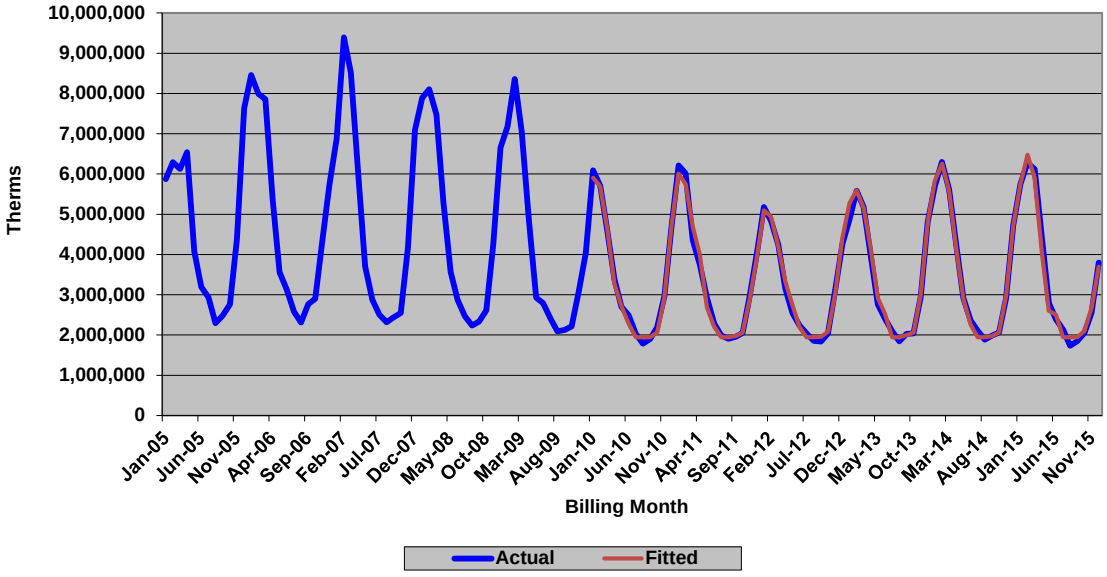


Figure 5
LVG Commercial Model
Actual vs. Fitted Values

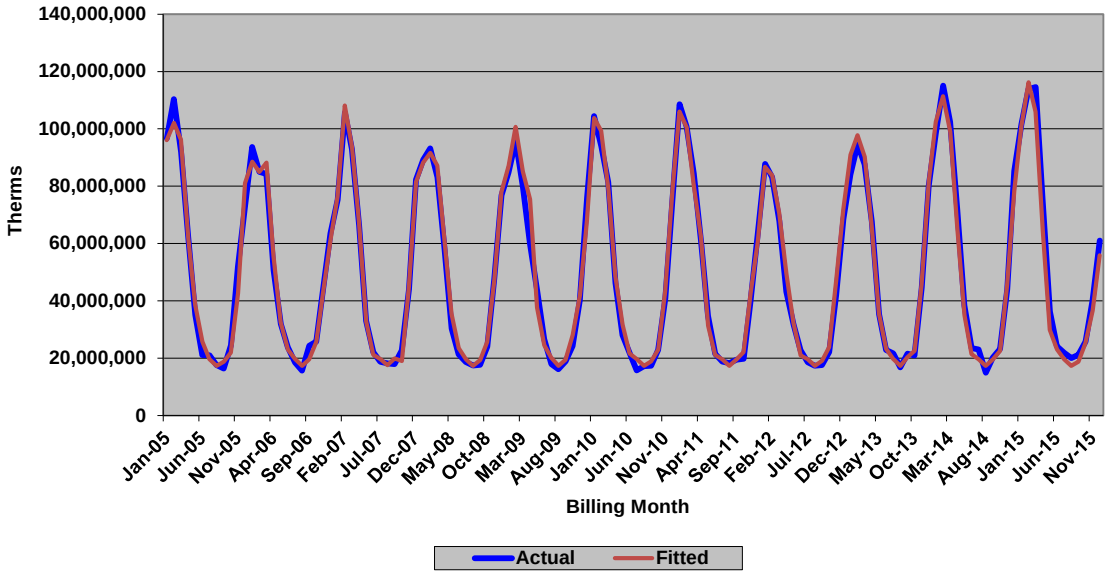


Table 2

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	-5805	-4105	-894	-23112							0.997	1.295	72
	(5,764.99)	(5,558.60)	(8,853.81)	(11,258.27)									
CUST x HDD	18.77	17.67	16.65	18.78	7.85	9.09	9.70	12.06	8.05	12.97			
	(3.13)	(1.85)	(2.40)	(3.75)	(0.89)	(4.63)	(15.75)	(10.58)	(3.20)	(1.14)			
NON-HEATING													
HDD	3782	3874	3933	4109	4446	11779	2977	1295	2609	3494	0.991	1.760	72
	(74)	(73)	(90)	(155)	(392)	(2,058)	(7,068)	(723)	(193)	(103)			

Table 3

Estimated Coefficients of the LVG Commercial Gas Sales Models

(standard errors in parentheses)

	HDD x CUST	R2	DW	n
CUST x HDD	25.07	0.989	1.913	120
	(1.31)			

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:

$$THERMS = f(PRICEGAS, EMP, HDD) \quad [7]$$

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:

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

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. 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.

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 & LVG, did not show any statistically significant response to price. 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

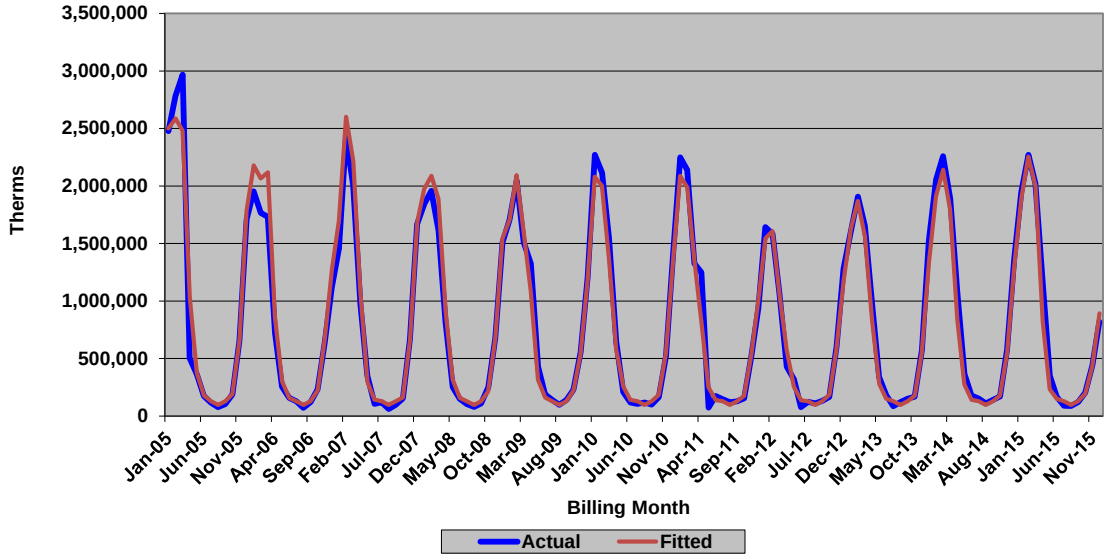


Figure 7
GSG Industrial Non-Space Heating Model
Actual vs. Fitted Values

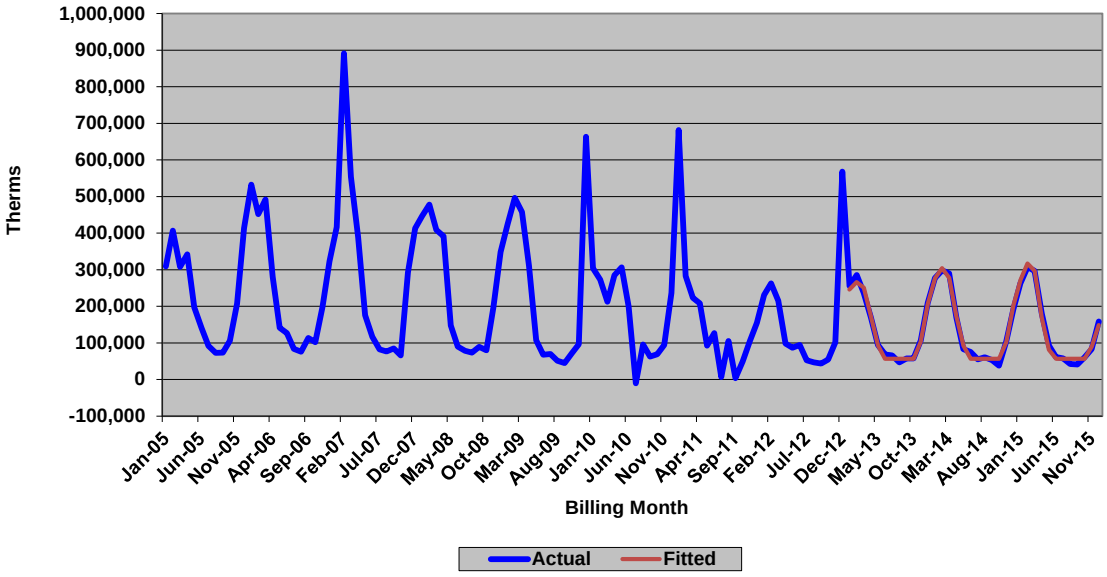


Figure 8
LVG Industrial Heating Model
Actual vs. Fitted Values

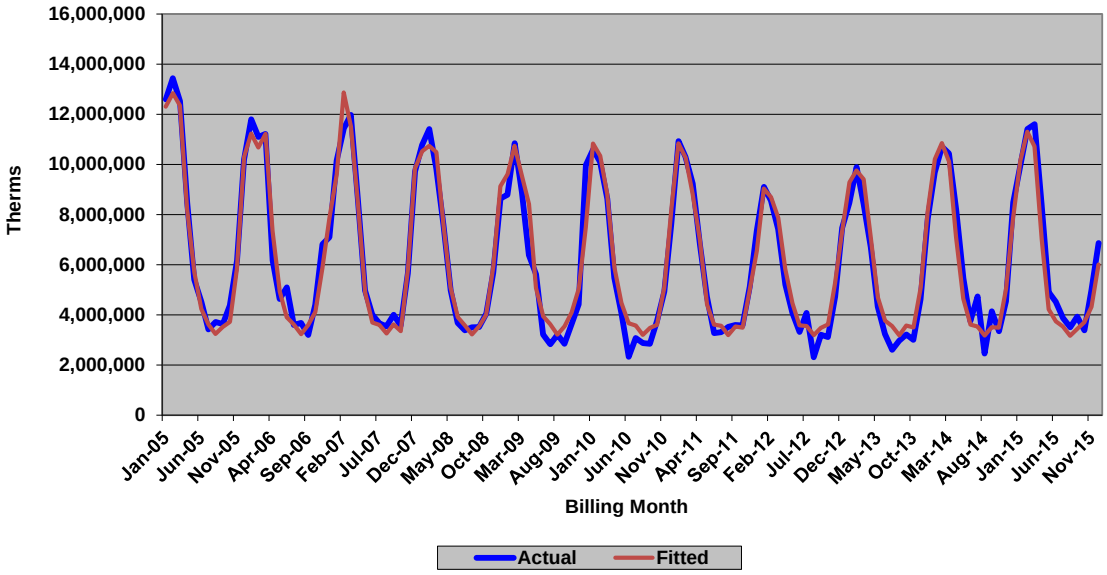


Table 4

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												
EMP x HDD	8.28 (1.32)	6.65 (1.00)	8.97 (0.91)	5.46 (0.38)	2.88 (0.90)	1.89 (3.78)	2.22 (1.78)	4.37 (0.48)	5.83 (0.95)	0.974	1.514	120
NON-HEATING												
HDD	214.27 (6.91)	222.49 (6.23)	237.87 (7.30)	219.36 (12.69)	166.63 (34.28)			115.37 (18.49)	182.78 (9.32)	0.990	1.870	36

Table 5

Estimated Coefficients of the LVG Industrial Gas Sales Models
(standard errors in parentheses)

HDD x TIME	HDD x EMP	R2	DW	n
-6.45 (32.40)	27.57 (2.16)	0.969	1.631	120

II Forecast Assumptions

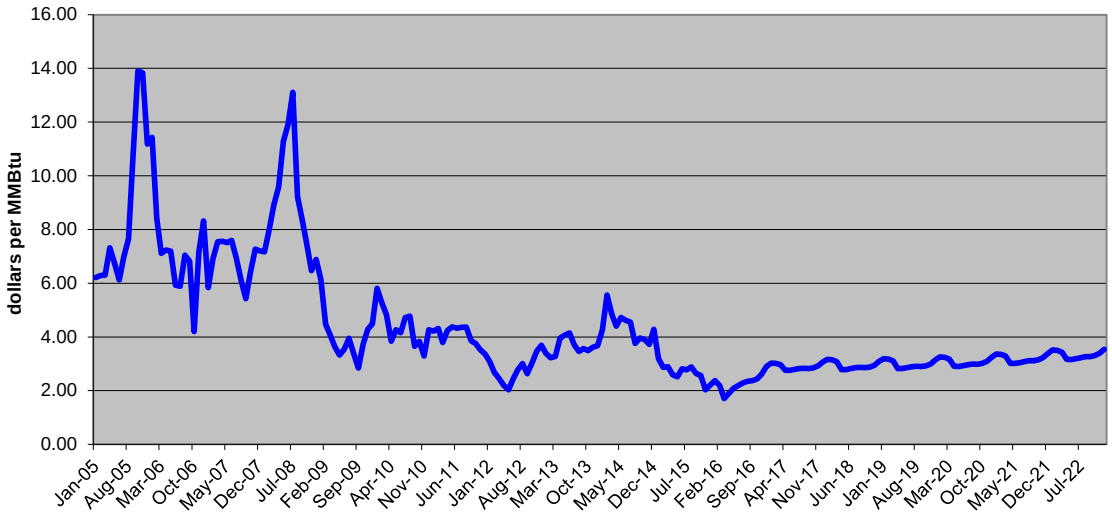
The models described above, in concert with assumptions about future prices and local economic and demographic parameters, were utilized to produce a forecast of billed natural gas delivered sales by rate for the residential, commercial, and industrial customer classes. The assumptions and the forecasts 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 April 20, 2016. As figure 9 shows, the wholesale price of gas is projected to stay relatively stable during the 2015-2021 periods.

Figure 9

NYMEX Natural Gas Futures Prices, April 20, 2016
($/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	
2005	1.13	1.31	1.37	1.38	1.24	1.37	1.37	1.21
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	0.70	0.79	0.75	0.74	0.60	0.74	0.77	0.56
2017	0.73	0.82	0.81	0.80	0.65	0.80	0.83	0.61
2018	0.73	0.82	0.82	0.81	0.66	0.81	0.84	0.62
2019	0.74	0.83	0.82	0.81	0.66	0.81	0.84	0.62
2020	0.75	0.84	0.82	0.81	0.67	0.82	0.84	0.63
2021	0.75	0.84	0.82	0.81	0.67	0.82	0.84	0.63
2022	0.74	0.84	0.82	0.81	0.67	0.81	0.83	0.63
2023	0.79	0.88	0.82	0.81	0.67	0.81	0.83	0.63
2024	0.79	0.88	0.82	0.81	0.67	0.81	0.83	0.63
2025	0.79	0.88	0.82	0.81	0.67	0.81	0.83	0.63

Economic Projections

Economic and demographic forecast assumptions for the nation and New Jersey are from Global Insight's March 2016 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 7.

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, 2015.

Table 7

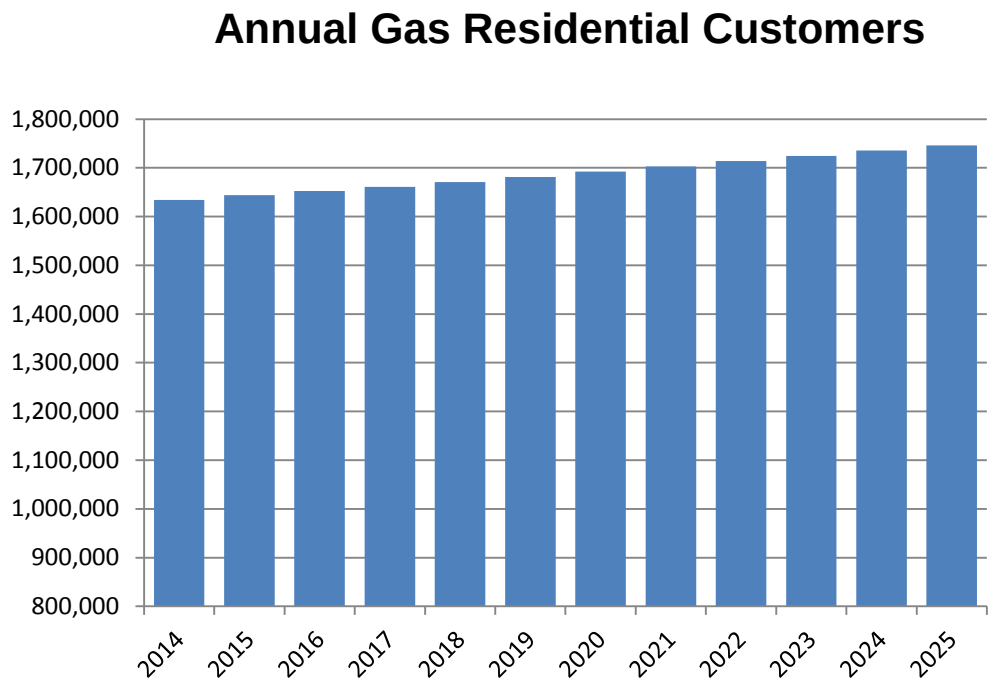
National and New Jersey Economic Forecast Assumptions

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
United States												
Real Gross Domestic Product (Bil-$)	15,962	16,345	16,717	17,181	17,627	18,038	18,464	18,877	19,300	19,735	20,169	20,616
Industrial Production (%,saar)	3.7	1.3	(0.7)	2.4	3.1	2.4	2.7	2.2	2.2	2.1	2.0	2.0
Personal Income (%,saar)	4.4	4.4	4.0	4.9	5.1	4.9	4.8	4.7	4.6	4.5	4.4	4.5
Payroll Employment (%,saar)	1.9	2.1	1.8	1.4	0.9	0.9	1.0	0.8	0.9	0.8	0.8	0.7
Unemployment Rate (%)	6.2	5.3	4.8	4.6	4.7	4.9	4.9	4.9	4.9	4.9	4.8	4.8
Consumers' Price Index(%, AAR)	1.6	0.1	0.8	2.3	2.7	2.7	2.6	2.6	2.5	2.5	2.5	2.4
3-Month Treasury Bill Rate (%)	0.0	0.1	0.5	1.3	2.3	2.8	2.8	2.8	2.8	2.8	2.8	2.8
30-Year Fixed Mortgage Rate (%)	4.2	3.9	3.9	4.4	5.0	5.7	5.7	5.7	5.7	5.7	5.7	5.7
New Jersey												
Real Personal Income (mil-$)	413,500	429,384	442,581	454,293	465,880	476,293	486,496	496,183	505,899	515,471	524,682	534,330
Total Employment (thous SA)	3,963	4,010	4,066	4,103	4,124	4,145	4,169	4,189	4,209	4,226	4,241	4,253
Manufacturing (thous. SA)	242	246	246	246	246	246	245	245	243	241	239	237
Nonmanufacturing (thous. SA)	3,720	3,764	3,820	3,856	3,878	3,900	3,924	3,944	3,966	3,985	4,002	4,016
Unemployment Rate (% SA)	6.6	5.9	5.1	4.8	4.8	5.0	5.0	5.0	5.0	5.0	5.0	4.9
Population (thous.)	8,940.5	8,961.7	8,990.8	9,023.5	9,058.6	9,096.5	9,135.0	9,172.8	9,209.8	9,245.8	9,280.8	9,314.4
Households (thous.)	3,235.6	3,246.5	3,265.4	3,281.9	3,303.6	3,328.3	3,351.9	3,375.4	3,402.2	3,431.8	3,459.6	3,485.1
Single-Family Housing Starts (thous.)	10.4	11.0	11.4	12.4	13.4	13.5	13.7	13.8	13.8	14.0	14.3	13.9

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 0.8 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



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 an assumed average wind velocity of 15 m.p.h. 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

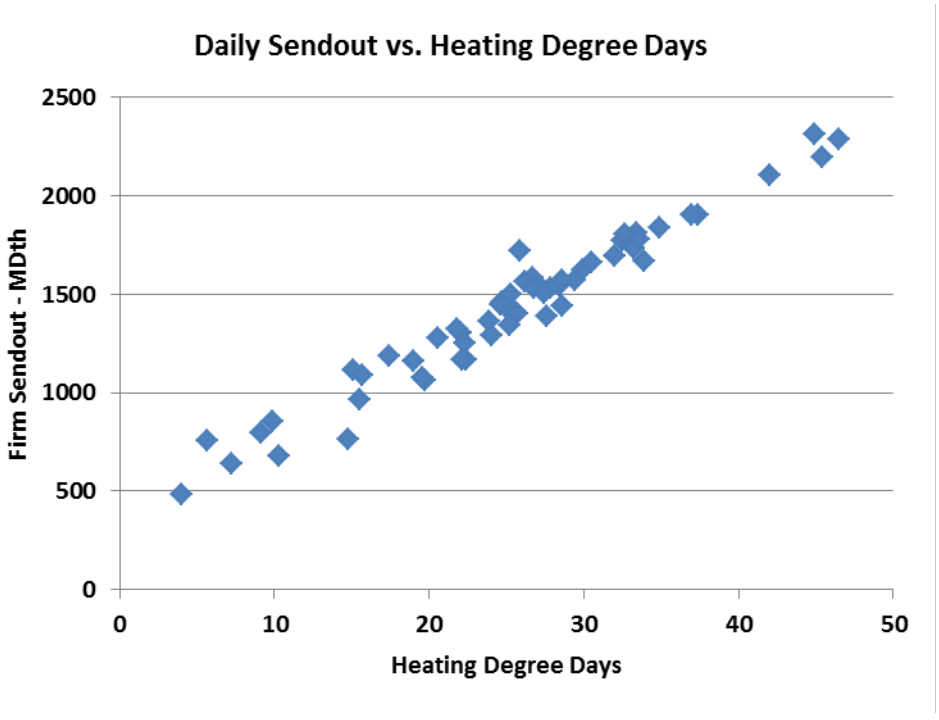
imprecision increases. The way to minimize this imprecision is to limit the observations to the lower temperature data so as to get a linear estimation of that portion of a non-linear curve that is closest to the ultimate extrapolation value.

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, 2017. 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 and February 2017



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.

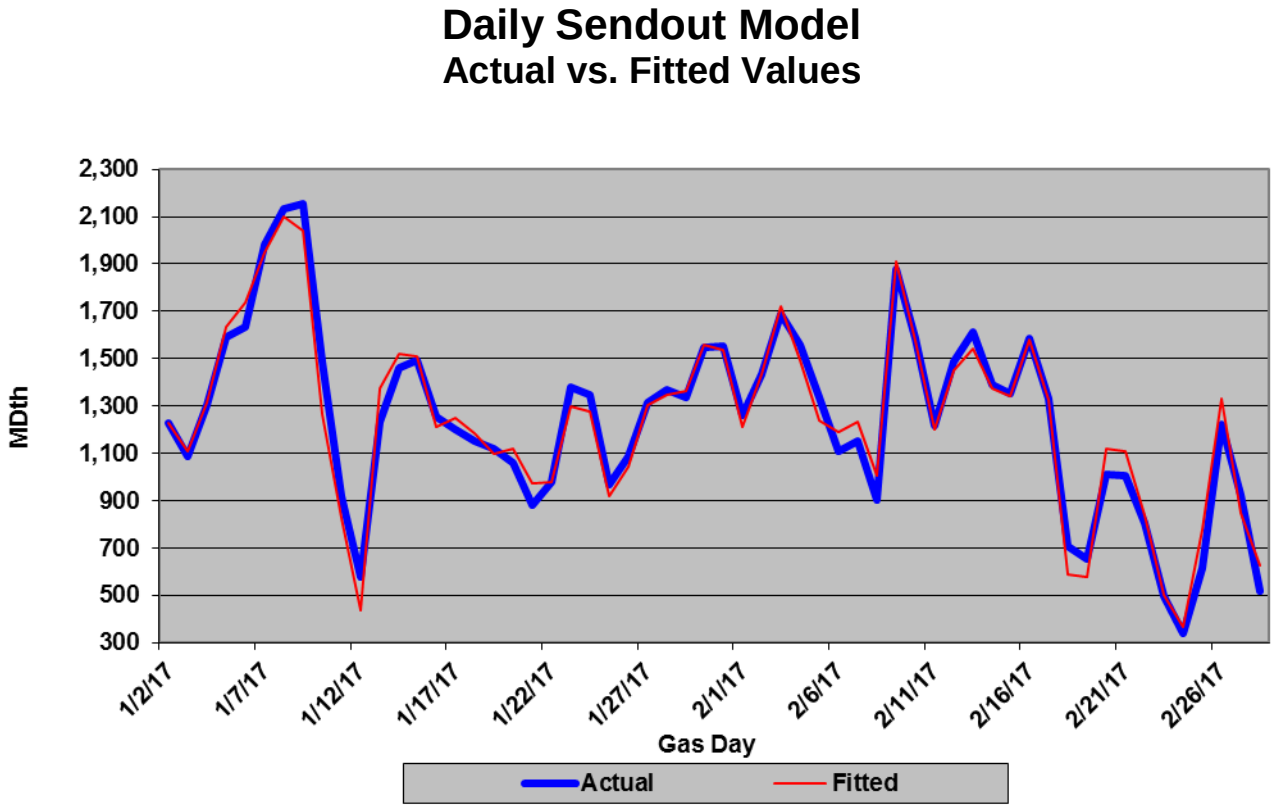
The estimation results are shown in Table 8 and Figure 12 below.

Table 8

Estimated Coefficients of the Daily Sendout Model
(standard errors in parentheses)

Intercept	HDD	HOLIDAY	WEEKDAY	SNOW	R2	DW	n
206.83	38.67	2.08	2.19	-14.84	0.96	1.25	58
(30.84)	(1.53)	(1.33)	(1.11)	(63.03)			

Figure 12



The estimated coefficients of the model suggest that he estimated maximum daily peak would occur on a Saturday. The model predicts that the maximum peak daily sendout would be 2,862.9 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.

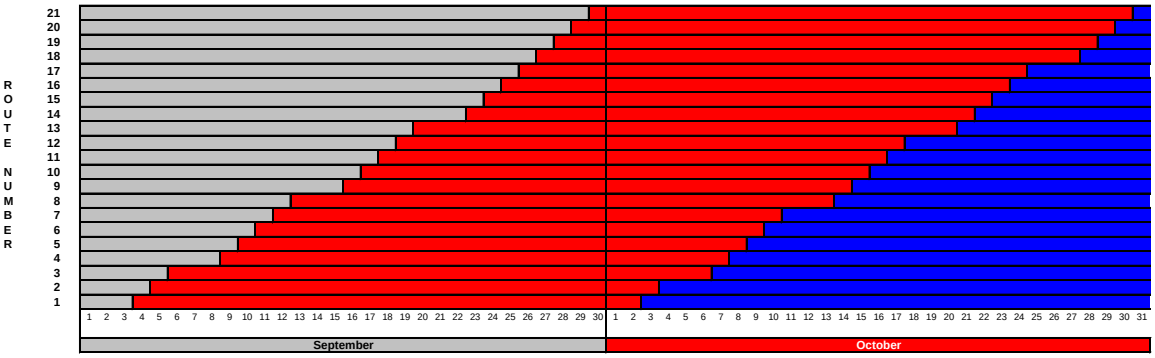
The Unbilled and Calendar-Month Estimation

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.

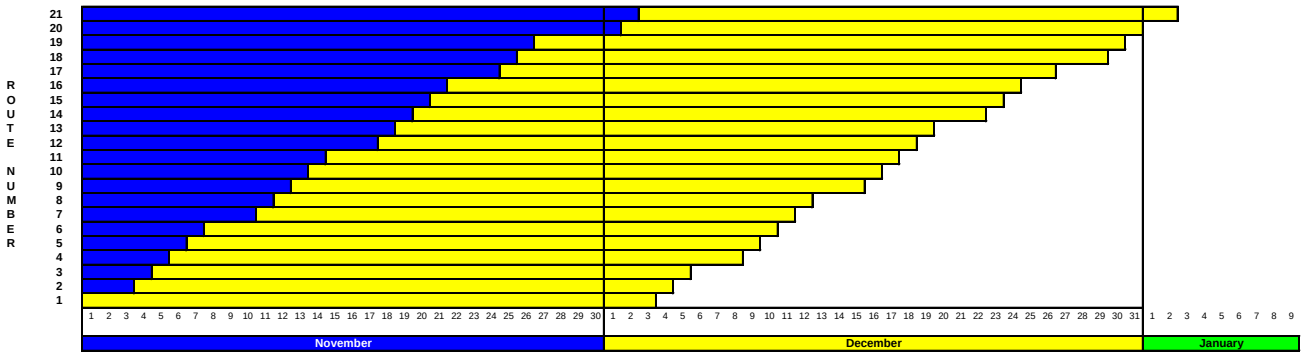
A More General Example

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

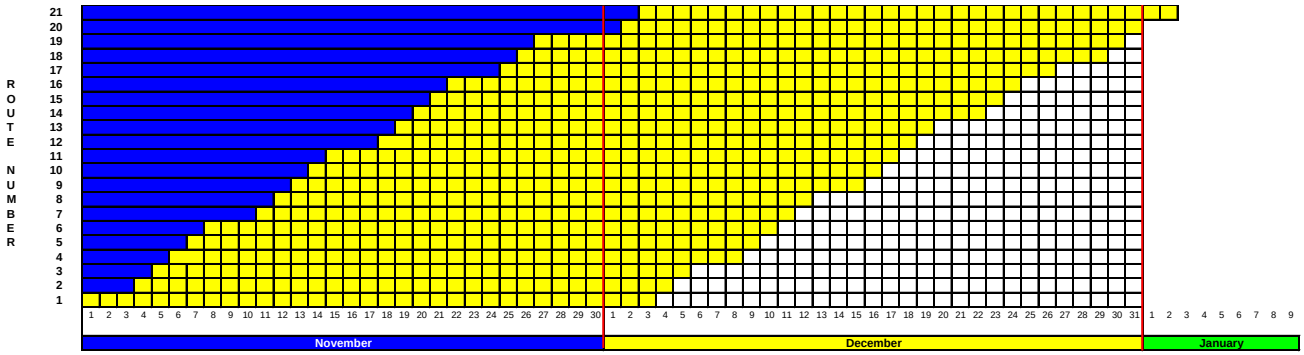
Billing	RSG				GSG-Commercial				GSG-Industrial				LVG - Non Vehicle			
	Heating		Non-heating		Heating		Non-heating		Heating		Non-heating		Commercial		Industrial	
Month	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD	Base	HDD
Jan-08	1,477,624	246,082	218,393	4,689	56,941	45,607	168,133	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:

$$1.5 \text{ (January } 1^{st} \text{ and half of January } 2^{nd}) \ / \ 21 = 0.07 \qquad [13]$$

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 x BASECoef + UnbilledHDD x HDDCoef [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.

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, 2017 to September 30, 2018) 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, 2017 through May 31, 2018. 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 $54,738,895 in deficiency revenues of which $31,882,242 will be recovered over the 2017-2018 Winter

Period and the remainder of $22,856,653 to be recovered over the 2018-2019 Winter Period. The total deficiency of $54,738,895 is comprised of two components:

- $30,843,325 of margin revenue deficiency resulting from the 2016-2017 Winter Period, plus
- $23,895,570 which represents the remaining under-collection from the 2015-2016 Winter Period approved for collection over the 2016-2017 Winter Period. A total of $53,745,674 was approved for collection over this past 2016-2017 Winter Period. The $23,895,570 remaining balance represents the difference between what PSE&G expected to collect versus what the Company actually collected over the 2016-2017 Winter Period and the application of the 3% rate cap.

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

A. I am sponsoring the following Schedules:

- Schedule DMP-WNC-1: 2016-2017 Winter Period Weather Normalization Calculation
- Schedules DMP-WNC-2a and DMP-WNC-2b: Weather Normalization Earnings Test and Supporting Schedule of Gas Jurisdictional Net Income for the 2016-2017 Annual Period
- Schedule DMP-WNC-3: Collection Schedule for the 2015-2016 WNC Under collection during the 2016-2017 Winter Period
- Schedule DMP-WNC-4: Summary Schedule of WNC Calculation for the Annual Period October 1, 2016 to September 30, 2017

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. 15 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 2016-2017 Winter Period.

Q. How is the 2016-2017 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 2016-2017 Winter Period. The normalized degree day variance produced a margin revenue deficit of $30,843,325 during the 2016-2017 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 2016/2017 margin revenue deficit.

Q. Are there any adjustments necessary for the calculation of the 2016-2017 WNC deferral and recovery request?

A. Yes, as discussed above, PSE&G has made two (2) adjustments to the 2016-2017 Winter Period margin revenue deficiency in order to calculate the amount to be collected from ratepayers over the 2017-2018 Winter Period.

Q. Please describe this first adjustment required to calculate the total 2017-2018 WNC.

A. In Docket No. GR16070617, the Board approved the collection of $53,745,674 through the WNC of which $33,156,456 was to be collected from October 1, 2016 through May 31, 2017. Due to the warmer than normal 2016-2017 winter weather, customer volumes were lower than anticipated, which resulted in a shortfall of the 2016-2017 Winter Period collections. The Company collected $29,850,104 resulting in a balance of $23,895,570 to be collected from customers. Please refer to Schedule DMP-WNC-3 for a schedule of the monthly collection of the prior years' WNC excess margin deficiency during the 2015-2016 Winter Period.

Q. Please explain the second adjustment for the applicability of the 3% rate cap limit of the RSG per therm rate.

A. Under the WNC Tariff, a positive weather normalization rate may not result in an increase of more than three percent (3%) of the RSG total per therm rate, including RSG-BGSS charges and 63.04% of the Balancing Charge. Further, 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.

Please refer to the testimony of Stephen Swetz and Schedule SS-WNC-2 for the computation of the 3% rate cap limit and the limitation calculation for recovery applicable to the 2017-2018 Winter Period. Application of the 3% rate cap limit, i.e., the second adjustment to the calculation of the 2016-2017 WNC, additionally reduces the Company's request for recovery during the 2017-2018 Winter Period from $54,738,895 to $31,882,242 without SUT. Since the 3% rate cap limit of $31,882,242 is less than the total WNC balance of $54,738,895 the resulting difference of $22,856,653 will be the carryover deficiency to the 2018-2019 Winter Period as shown in Schedule-DMP-WNC-4.

Q. Please explain the earnings test and its zero impact on the 2016-2017 WNC.

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 10.3% 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. 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 net income of the gas portion of the Company.

As calculated in accordance with the tariff as described above, the Company's allowed net income for the 2016-2017 Winter Period for purposes of the Earnings Test is $194,827,603. Please refer to DMP-WNC-2a. In this proceeding, the Company's forecasted net income for the Annual Period ended September 30, 2017 is $151,053,934 or $43,773,669 less than the allowed amount (which equates to $74,004,512 on a pre-tax basis). Since the 2016-2017 Winter Period margin deficiency is calculated at $30,843,325 on a pre-

tax basis and when compared to the allowed pre-tax amount of $74,004,512 there is $0 limitation as a result of the required Earnings Test.

Q. Please describe the calculation of the earnings test on Schedules DMP-WNC-2a and 2b.

A. WNC Schedule DMP-WNC-2a sets forth the calculation of the authorized return on common equity using the average 13-month net gas plant in service. The average net gas plant in service was calculated by adding the actual net plant in service balances at the end of each of the eight months from September 2016 through April 2017, and the projected balances for the months of May through September 2017. The sum of these balances was divided by 13 to arrive at the average net gas plant in service balance.

The average equity of $1,891,530,125 is calculated by multiplying the average net gas plant in service balance of $4,627,031 by the Board established equity ratio of 40.88%. This amount is then multiplied by the Board approved return on equity of 10.3% to generate the allowed net income of $194,827,603 for the purposes of the WNC.

Schedule DMP-WNC-2b details the calculation of regulated gas net income for the period of October 1, 2016 through September 30, 2017. For purposes of this calculation, the amounts presented include eight months of actual gas income through May 31, 2017 and four months of projected gas

income. The projected amounts were developed from the Company's 2017 forecast. As discussed above, gas net income by month is derived by taking the gas jurisdictional net income excluding WNC, less certain gas clause income included therein. That is, the Company subtracts from gas income any income recognized in the gas accounts from the WNC and the Green Programs Recovery Charge. As previously stated, as a result of the application of the WNC Earnings Test, there is no adjustment to the 2016-2017 Winter Period margin deficiency of $30,843,325.

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 $54,738,895, of which $31,882,242 will be recovered over the 2017-2018 Winter Period with the remaining deficiency of $22,856,653 to be recovered over the 2018-2019 Winter Period. Please see DMP-WNC-4 for a summary schedule of the balance. The specific rate impacts and calculations relative to the 2017-2018 Winter Period will be discussed in the testimony of Stephen Swetz.

Q. Does this conclude your testimony in this matter?

A. Yes.

PSE&G
Weather Normalization
2016-2017 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	252.3	1.3	251.0	253.5	223.2	27.9
November	526.4	2.6	523.8	529.0	460.1	63.7
December	815.2	4.1	811.2	819.3	843.9	(24.6)
January	1005.7	5.0	1000.7	1010.7	844.3	156.4
February	843.2	4.2	839.0	847.4	667.7	171.3
March	697.9	3.5	694.4	701.4	787.1	(85.7)
April	358.6	1.8	356.8	360.4	278.5	78.3
May	127.5	0.6	126.9	128.2	173.8	(45.7)

Step 2: Determine the normalized volumes by rate class.

	Therms Per Degree Day (2)			Normalization Volumes (3)		
	RSG	GSG	LVG	RSG	GSG	LVG
October	103,071	21,105	86,775	2,870,527	587,774	2,416,684
November	199,736	62,752	86,775	12,723,183	3,997,302	5,527,568
December	254,327	53,237	86,775	(6,256,444)	(1,309,630)	(2,134,665)
January	247,213	61,629	87,215	38,659,169	9,637,543	13,638,682
February	250,191	63,835	87,215	42,847,711	10,932,382	14,936,441
March	245,493	58,006	87,215	(21,041,205)	(4,971,694)	(7,475,198)
April	220,131	44,648	87,215	17,242,861	3,497,278	6,831,551
May	170,638	29,686	87,215	(7,791,331)	(1,355,463)	(3,982,237)

Step 3: Calculate the margin revenue to be deferred.

	Margin Revenue Deferral (4)				
	RSG	GSG	LVG		
Margin Revenue Factor	0.302791	0.2491	0.040142	Total	Allowed per Earnings Test
October	$ 869,170	$ 146,415	$ 97,011	$ 1,112,595	$ 1,112,595
November	$ 3,852,465	$ 995,728	$ 221,888	$ 5,070,081	$ 5,070,081
December	$ (1,894,395)	$ (326,229)	$ (85,690)	$ (2,306,314)	$ (2,306,314)
January	$ 11,899,988	$ 2,427,157	$ 556,649	$ 14,883,795	$ 14,883,795
February	$ 13,189,297	$ 2,753,255	$ 609,616	$ 16,552,167	$ 16,552,167
March	$ (6,476,862)	$ (1,252,091)	$ (305,093)	$ (8,034,046)	$ (8,034,046)
April	$ 5,307,663	$ 880,768	$ 278,823	$ 6,467,254	$ 6,467,254
May	$ (2,398,312)	$ (341,365)	$ (162,531)	$ (2,902,208)	$ (2,902,208)
Winter Period Total	$ 24,349,014	$ 5,283,638	$ 1,210,673	$ 30,843,325	$ 30,843,325

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 (10.3%) 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
(5) See page 2

PSE&G

Weather Normalization Earnings Test

Annual Period October 1, 2016 to September 30, 2017

	Gas Plant In Service	Accumulated Depreciation	Net Plant in Service	
	000's omitted			
September 2016	$ 6,583,953	$ (2,288,751)	$ 4,295,202	Actual
October	$ 6,644,231	$ (2,293,187)	$ 4,351,044	Actual
November	$ 6,701,500	$ (2,299,875)	$ 4,401,625	Actual
December	$ 6,753,616	$ (2,281,106)	$ 4,472,510	Actual
January	$ 6,784,387	$ (2,286,662)	$ 4,497,725	Actual
February	$ 6,827,438	$ (2,292,473)	$ 4,534,965	Actual
March	$ 6,868,687	$ (2,296,492)	$ 4,572,195	Actual
April	$ 6,918,284	$ (2,298,575)	$ 4,619,710	Actual
May	$ 7,059,930	$ (2,334,673)	$ 4,725,257	*Forecasted*
June	$ 7,133,991	$ (2,341,804)	$ 4,792,187	*Forecasted*
July	$ 7,209,674	$ (2,349,546)	$ 4,860,128	*Forecasted*
August	$ 7,281,634	$ (2,357,307)	$ 4,924,327	*Forecasted*
September 2017	$ 7,349,785	$ (2,370,410)	$ 4,979,374	*Forecasted*
13 Month Average	$ 6,950,600	$ (2,323,570)	$ 4,627,031	Calculated

Equity Ratio		40.88%	Per WNC Tariff
Average Equity		$ 1,891,530,125	
Allowed ROE		10.3%	Per WNC Tariff
Allowed Net Income	**(a)**	$ 194,827,603	
Forecasted Net Income (1)	**(b)**	$ 151,053,934	From Sch DMP-WNC-2b
Maximum Recoverable through WNC - after tax, Year Ended 9/2017	**(c)**	$ 43,773,669	***(a)*** *minus* ***(b)***
Gross up factor utilizing Effective Tax Rate of 40.85%	**(d)**	0.5915	*Sum of 1- 40.85%*
Maximum Recoverable through WNC - pre-tax, Year Ended 9/2017	**(e)**	$ 74,004,512	***(c)*** *divided by* ***(d)***
Margin Deferral, as calculated prior to application of earnings test	**(f)**	$ 30,843,325	From Sch DMP-WNC-1
Recovery Request from 2016-2017 Winter Period		**$ 30,843,325**	Lower of **(e)** vs. **(f)**

To Schedule DMP-WNC-4

PSE&G

Adjusted Gas Jurisdictional New Income

Annual Period October 1, 2016 to September 30, 2017

Gas
Net Income

	Actual	WNC	GPRC	Net for WNC	
Oct-16	5,322,000	658,100	89,137	4,574,763	Actual
Nov-16	25,440,000	2,998,953	88,252	22,352,795	Actual
Dec-16	23,446,000	(1,364,184)	93,255	24,716,929	Actual
Jan-17	54,399,000	8,803,765	97,958	45,497,277	Actual
Feb-17	48,858,000	9,790,607	96,203	38,971,190	Actual
Mar-17	36,585,000	(4,752,138)	95,694	41,241,444	Actual
Apr-17	15,762,166	3,825,381	93,337	11,843,448	Actual
May-17	(3,202,715)	(1,716,656)	91,854	(1,577,913)	Actual
Jun-17	(7,665,000)	-		(7,665,000)	*Forecasted*
Jul-17	(9,012,000)	-		(9,012,000)	*Forecasted*
Aug-17	(10,284,000)	-		(10,284,000)	*Forecasted*
Sep-17	(9,605,000)	-		(9,605,000)	*Forecasted*
	170,043,451	18,243,827	745,690	151,053,934	

PSE&G

Collection Schedule for Prior Years' Winter Period Undercollections

Effective for the period June 1, 2016 to September 30, 2017

		$	
Under-collected beginning balance	**(a)**	$ 53,745,674	Approved Per BPU Docket No. GR16070617
Amounts refunded to/(collected from) customers per month:			
Jun-16		($18,656)	
Jul-16		($8,252)	
Aug-16		($6,610)	
Sep-16		($9,468)	
Oct-16		$20,868	
Nov-16		($2,496,846)	
Dec-16		($5,691,966)	
Jan-17		($8,010,848)	
Feb-17		($6,998,173)	
Mar-17		($6,535,842)	
Apr-17		($123,789)	
May-17		$29,479	
Jun-17		$0	
Jul-17		$0	
Aug-17		$0	
Sep-17		$0	
Total amount collected from customers	**(b)**	($29,850,104)	
Remaining amount to be collected from customers		$23,895,570	***(a) plus (b)***
		To Schedule DMP-WNC-4	

PSE&G
Weather Normalization Summary Schedule
Annual Period October 1, 2016 to September 30, 2017

			Schedule Reference
2016-2017 Winter Period Total WNC Revenue Deficiency	$ 30,843,325	***(a)***	**DMP-WNC-1**
Remaining balance from the 2015-2016 WNC, to be collected during 2017-2018 Winter Period	$23,895,570	***(b)***	**DMP-WNC-3**
. Total WNC Balance to be Collected	$ 54,738,895	***(c)***	***(a) + (b)***
Deficiency allowed for recovery in the 2017-2018 Winter Period due to application of 3% rate cap	$ 31,882,242	***(d)***	**SS-WNC-2**
Carryover Deficiency to 2018-2019 Winter Period	$ 22,856,653		**(c) minus (d)**

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, 2017 through May 31, 2018 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 based upon the RSG total per therm rate.

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.

As shown in Donna M. Powell's Testimony, Schedule DMP-WNC-1, the Margin Revenue Deferral calculation indicates a margin deficiency for the 2016-2017 Winter Period of $30,843,325. Pursuant to the WNC tariff, this deficiency is subject to an earnings test. As a result of the application of the WNC Earnings Test, there is no adjustment to the 2016-2017 Winter Period margin deficiency of $30,843,325. See Donna M. Powell's Attachment 2 Schedules DMP-WNC-2a and DMP-WNC-2b. To determine the 2017-2018 WNC Balance for the Winter Period, that amount is then increased from the remaining balance from the 2015-2016 WNC, to be collected during the 2016-2017 Winter Period of $23,895,570. Therefore the 2017-2018 WNC Balance is increased to $54,738,895, as described in the testimony of Donna M. Powell (Attachment 2), Schedule DMP-WNC-4.

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

A. As stated in Section II of the Company's proposed WNC Tariff Sheet 47 (Attachement 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 63.54% 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 $0.771180 (with SUT) per

therm. The 3% rate cap limit results in a WNC $0.023135 per therm with SUT ($0.021647 per therm without SUT). This allowed rate of $0.021647 is then multiplied by the total forecasted balancing therms per Schedule SAW-WNC-4 (Attachment 1) of 1,472,824,972 to determine the amount the Company is expecting to recover of $31,882,242 without SUT. Since the 3% rate cap limit of $31,882,242 is less than the total WNC balance of $54,738,895, the WNC rate for the 2017-2018 Winter Period is designed on the 3% rate cap limit of $31,882,242 without SUT. The resulting deficiency of $22,856,653 will be carried over to the 2017-2018 Winter Period as detailed in the Testimony of Donna M. Powell, Schedule DMP-WNC-4.

Q. Please show the WNC calculation.

A. The WNC calculation is shown below:

1	Recovery Request for 2017-2018 Winter Period (Schedule SS-WNC-2)	$31,882,242
2	Forecasted Balancing Therms (Schedule SAW-WNC-4)	1,472,824,972
3=1/2	Weather Normalization Charge (per Balancing Therm)	$0.021647
4=3*1.06875	Weather Normalization Charge (Including Sales and Use Tax (SUT)	$0.023135

Q. Please define the PSE&G proposal to implement the WNC for the 2017-2018 annual period.

A. As a result of these calculations, PSE&G proposes a WNC of $0.021647 without SUT ($0.023135 with SUT) per balancing therm applicable to Rate Schedules RSG, GSG and LVG for the 2017-2018 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 25 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 the Corporate Rates and Revenue Requirements department, 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 page 3 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	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	ER17020136	written	Feb-17	Societal Benefits Charge (SBC) / Cost Recovery
Public Service Electric & Gas Company	E	EO16080788	written	Aug-16	Construction of Mason St Substation
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	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	G	GR16060484	written	Jun-16	Margin Adjustment Charge (MAC) / Cost Recovery
Public Service Electric & Gas Company	E	EO16050412	written	16-May	Solar 4 All Extension II (S4Allext II) / Revenue Requirements & Rate Design
Public Service Electric & Gas Company	E/G	ER16030272 - GR16030273	written	16-Mar	Energy Strong / Revenue Requirements & Rate Design - Fourth Roll-in
Public Service Electric & Gas Company	E/G	GR15111294	written	15-Nov	Remediation Adjustment Charge-RAC 23
Public Service Electric & Gas Company	E	ER15101180	written	15-Sep	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
Public Service Electric & Gas Company	E/G	ER14070651-GR14070652	written	Jul-14	Green Programs Recovery Charge (GPRC)-Including CA, DR, EEE, EEE Ext, S4All, S4AEXT, SLII, SLIII / Cost Recovery
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	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
2017-2018 WNC Rate Cap Calculation

Residential Service (RSG)		**Service Chg with SUT**	**Per Therm Charges as of 6/01/17 with SUT**
Service Charge		$5.84	
Distribution Charge			$0.328980
Societal Benefits Charge (SBC)			$0.047232
Green Programs Recovery Charge (GPRC)			$0.004981
Margin Adjustment Charge (MAC)			-$0.006774
Captial Adjustment Charge (CAC)			
Service Charge		$0.00	
Distribution Charge			$0.000000
Margin Adjustment Charge (MAC)			$0.000000
BGSS-RSG			$0.339408
	Subtotal	$5.84	$0.713827
(1) Effective Annualize Balancing Charge			$0.057353
Total per therm rate			$0.771180
Weather Normalization Charge Cap %			3.00%
Weather Normalization Charge Cap with SUT			$0.023135
Weather Normalization Charge Cap without SUT			$0.021647
Total Forecasted Balancing Therms Per 2017 Schedule SAW-WNC-4			1,472,824,972
Amount allowed to recover in 2017 -2018 Winter Period based on 3% WNC Rate Cap and Forecasted Balancing Therms			$31,882,242

(1) **Balancing Charge Ratio From 2017 SAW-WNC-5**	**Balancing Charge w SUT**	**Effective Annualized Balancing Charge**
63.54%	$0.090263	$0.057353

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 45**
Superseding
B.P.U.N.J. No. 15 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, 2017 through May 31, 2018	$0.021647	$0.023135
June 1, 2018 through September 30, 2018	$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^{o}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 2017-2018 Winter Period are set forth in the table below:

	Normal Degree Days
Oct - 17	249.24
Nov - 17	514.57
Dec - 17	819.31
Jan - 18	999.69
Feb - 18	838.55
Mar - 18	682.31
Apr - 18	357.52
May - 18	126.62

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. 15 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 2017-2018 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.-17	106,936	2,872	39,384	1,295	81,860	545	-	6,671
Nov.-17	195,957	8,613	26,279	2,609	81,860	1,075	115	6,671
Dec.-17	244,471	11,825	42,337	3,494	81,860	1,434	183	6,671
Jan.-18	235,679	11,758	57,050	3,782	82,274	2,039	214	6,672
Feb.-18	240,480	11,629	54,776	3,874	82,274	1,638	222	6,672
Mar.-18	234,561	12,252	53,931	3,933	82,274	2,207	238	6,672
Apr.-18	210,553	13,559	43,515	4,109	82,274	1,344	219	6,672
May-18	164,748	9,961	25,772	4,446	82,274	710	167	6,672

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	$0.307818
Rate Schedule GSG	$0.251844
Rate Schedule LVG	$0.040814

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 less Accumulated Depreciation Reserve) 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 40.88% (ratio of equity component of the Company's capital structure to net plant in service from most recent base rate case).

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 47**
Superseding
B.P.U.N.J. No. 15 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 10.3% 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 (Green Programs Recovery Charge, Capital Adjustment Charge, etc) 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 63.54% 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. 15 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, ~~2016~~ 2017 through May 31, ~~2017~~2018	$0.021647 ~~0.022795~~	$0.023135 ~~0.024362~~
June 1, ~~2017~~ 2018 through September 30, ~~2017~~2018	$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 ~~2016~~2017-~~2017~~ 2018 Winter Period are set forth in the table below:

	Normal Degree Days
Oct - ~~16~~17	~~252.28~~ 249.24
Nov - ~~16~~17	~~526.39~~ 514.57
Dec - ~~16~~17	~~815.24~~ 819.31
Jan - ~~17~~18	~~1,005.70~~ 999.69
Feb - ~~17~~18	~~843.19~~ 838.55
Mar - ~~17~~18	~~697.87~~ 682.31
Apr - ~~17~~18	~~358.62~~ 357.52
May - ~~17~~18	~~127.53~~ 126.62

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. 15 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 ~~2016~~2017 ~~2017~~ 2018 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.-~~16~~17	106,936 ~~100,265~~	2,872 ~~2,673~~	39,384 ~~19,191~~	1,295 ~~1,362~~	81,860 ~~80,283~~	545 ~~552~~	-	6,671 ~~6,492~~
Nov.-~~16~~17	195,957 ~~190,882~~	8,613 ~~8,649~~	26,279 ~~58,910~~	2,609 ~~2,643~~	81,860 ~~80,283~~	1,075 ~~1,081~~	115 ~~118~~	6,671 ~~6,492~~
Dec.-~~16~~17	244,471 ~~239,811~~	11,825 ~~11,798~~	42,337 ~~48,256~~	3,494 ~~3,467~~	81,860 ~~80,283~~	1,434 ~~1,337~~	183 ~~177~~	6,671 ~~6,492~~
Jan.-~~17~~18	235,679 ~~233,722~~	11,758 ~~11,237~~	57,050 ~~55,580~~	3,782 ~~3,774~~	82,274 ~~80,741~~	2,039 ~~2,057~~	214 ~~218~~	6,672 ~~6,474~~
Feb.-~~17~~18	240,480 ~~236,933~~	11,629 ~~11,359~~	54,776 ~~58,053~~	3,874 ~~3,917~~	82,274 ~~80,741~~	1,638 ~~1,638~~	222 ~~227~~	6,672 ~~6,474~~
Mar.-~~17~~18	234,561 ~~230,820~~	12,252 ~~11,757~~	53,931 ~~51,713~~	3,933 ~~3,851~~	82,274 ~~80,741~~	2,207 ~~2,206~~	238 ~~236~~	6,672 ~~6,474~~
Apr.-~~17~~18	210,553 ~~206,269~~	13,559 ~~12,110~~	43,515 ~~39,255~~	4,109 ~~3,903~~	82,274 ~~80,741~~	1,344 ~~1,282~~	219 ~~208~~	6,672 ~~6,474~~
May-~~17~~18	164,748 ~~159,370~~	9,961 ~~9,516~~	25,772 ~~24,602~~	4,446 ~~4,258~~	82,274 ~~80,741~~	710 ~~683~~	167 ~~143~~	6,672 ~~6,474~~

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	$0.307818
Rate Schedule GSG	$0.251844
Rate Schedule LVG	$0.040814

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 less Accumulated Depreciation Reserve) 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 40.88% (ratio of equity component of the Company's capital structure to net plant in service from most recent base rate case).

PUBLIC SERVICE ELECTRIC AND GAS COMPANY **XXX Revised Sheet No. 47**
Superseding
B.P.U.N.J. No. 15 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.

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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	180	$207.27	$207.19	($0.08)	(0.04)%
50	360	344.47	344.29	(0.18)	(0.05)
100	610	547.68	547.24	(0.44)	(0.08)
159	1,000	852.55	851.82	(0.73)	(0.09)
165	1,010	861.02	860.27	(0.75)	(0.09)
200	1,224	1,028.71	1,027.82	(0.89)	(0.09)
300	1,836	1,507.85	1,506.47	(1.38)	(0.09)

(1) Based upon Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect June 1, 2017 (with WNC set at the rate that was in effect for the 2016-2017 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 2017-2018 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:
180	25	$25.62	$25.60	($0.02)	(0.08)%
360	50	45.43	45.39	(0.04)	(0.09)
610	100	86.73	86.63	(0.10)	(0.12)
1,010	165	139.32	139.15	(0.17)	(0.12)
1,224	200	167.64	167.44	(0.20)	(0.12)
1,836	300	248.53	248.22	(0.31)	(0.12)

(3) Based upon Delivery Rates and Basic Gas Supply Service (BGSS-RSG) charges in effect June 1, 2017 (with WNC set at the rate that was in effect for the 2016-2017 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 2017-2018 Annual Period.