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February 24, 2015

M-2015-2460711

Via Overnight Delivery Service

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

RE: Columbia Gas of Pennsylvania, Inc. (120700)
Annual Resource Planning Report

Dear Ms. Chiavetta:

Enclosed for filing please find seven (7) bound copies and one (1) unbound copy of Columbia Gas of Pennsylvania, Inc.'s 2015 Annual Resource Planning Report, Forms 1 and 2. Also enclosed is a disk containing these forms.

I have enclosed an additional hard copy of the report. Please file stamp the additional copy and return it to me in the enclosed self-addressed, stamped envelope.

If you have questions, please call me at 724.416.6355 or e-mail me at tjgallagher@nisource.com.

Very truly yours,

Theodore J. Gallagher

/kak
Enclosures

cc: Bureau of Technical Utility Services
Office of Consumer Advocate
Office of Small Business Advocate
Bureau of Investigation and Enforcement

M-2015-2460711

ANNUAL RESOURCE PLANNING REPORT

Columbia Gas of Pennsylvania, Inc.

2015

Forms 1 & 2

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Columbia Gas of Pennsylvania, Inc.
121 Champion Way, Suite 100
Canonsburg, PA 15317

ANNUAL RESOURCE PLANNING REPORT
Forms 1 & 2

Information Submitted in Compliance with and Pursuant to Title 52
Pennsylvania Code Section 59.81

COLUMBIA GAS OF PENNSYLVANIA, INC.

TABLE OF CONTENTS

EXHIBIT NO.	REGULATION	DESCRIPTION
1	59.81	General
2	59.81	Forms IRP-Gas 1A, and 1B Annual and Peak Day Energy Demand
3	59.81	Forms IRP-Gas 2A, 2B, and 2C Annual and Peak Day Energy Resources, and transmission and storage contracts

Section 59.81: **General**

Pursuant to Section 59.81(a), each major jurisdictional gas utility must file an annual resource planning report (ARPR) on or before June 1, 1996 and June 1 of each succeeding year, except Form 1A/2A which filing date is March 1. One (1) original and seven (7) copies of the report must be submitted to:

Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

One copy should be submitted unbound for ease of duplication.

One courtesy copy should also be submitted to:

Pennsylvania Public Utility Commission
Conservation, Economics and Energy Planning
P.O. Box 3265
Harrisburg, PA 17105-3265

Also submit one (1) copy to the following:

Office of Consumer Advocate
555 Walnut Street
Forum Place, 5th Floor
Harrisburg, PA 17101-1923

Office of Small Business Advocate
Suite 1102, Commerce Building
300 N. Second Street
Harrisburg, PA 17101

Bureau of Investigation and Enforcement
P.O. Box 3265
Harrisburg, PA 17101-3265

Be sure to indicate the name and telephone number of at least one individual at the company who is familiar with the filing and will be available to answer any questions the Commission staff may have. You may also wish to list those individuals who are directly involved in the preparation of the various document components.

Information contained in annual resource planning reports must be utility-specific. The report should follow an outline similar to that which is contained herein, with narrative accompanying the required data. Forms may be modified to accommodate wide columns of numbers and enhance readability, but the general format should be used to maintain consistency.

This information is not generally considered confidential. Utilities are obligated to provide complete information. However, we will treat as confidential those portions of the report designated by the utility as proprietary. If a utility's proprietary claim is challenged, the Commission will direct the utility to file a petition for protective order pursuant to 52 PA Code 5.423.

All questions concerning the reporting requirements for Forms IRP Gas 1A through 9 should be addressed to Pennsylvania Public Utility Commission Bureau of Conservation, Economics and Energy Planning.

Response:

An original, seven (7) copies, and one unbound copy of Forms 1A, 1B, 2A, 2B, and 2C along with a general discussion of the methodologies, data sources, and assumptions are being submitted to meet the requirements of the March 1 filing. The forms also are included on electronic media.

General questions concerning the ARPR should be directed to Nancy J.D. Krajovic, Director of Rates and Regulatory Affairs at (724) 416-6370. The following individuals will be available to answer questions concerning each section:

Form 1A/B, - William J. Gresham, Manager of Forecasting (614) 460-6215

Forms 2A/B/C, - Henry A. Catron, Director, Supply and Capacity Management (614) 460-6222

Section 59.81 **Forms IRP-Gas 1A, and 1B - Annual and Peak Day Demand**

The load growth projections shall reflect the effects of price elasticity, market induced conservation, building and appliance efficiency standards, and the effects of the utility's existing and planned conservation and load management activities.

Response: Please see the attached documentation and forms.

FORM-IRP-GAS-1B: PEAK DAY REQUIREMENTS
REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.
(volumes In Mmcf)

	Historical Data		Current Year	Three Year Forecast		
Index Year	-2	-1	0	1	2	3
Actual Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Firm Sales						
Retail Residential	229.2	275.4	307.0	315.3	320.1	325.1
Retail Commercial	96.7	111.9	128.3	130.9	134.1	136.7
Retail Industrial	0.7	0.8	0.7	0.7	0.7	0.7
Electric Power Generation	0.0	0.0	0.0	0.0	0.0	0.0
Exchanges with Other Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Unaccounted for Gas	0.7	0.7	0.7	0.7	0.7	0.7
Company Use	0.4	0.4	0.4	0.4	0.4	0.4
Other	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Firm Sales	327.7	389.2	437.1	448.0	456.0	463.6
Interruptible Sales						
Retail	0.0	0.0	0.0	0.0	0.0	0.0
Electric Power Generation	0.0	0.0	0.0	0.0	0.0	0.0
Company's Own Plant	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Interruptible Sales	0.0	0.0	0.0	0.0	0.0	0.0
SUBTOTAL FIRM AND INTERRUPTIBLE SALES:	327.7	389.2	437.1	448.0	456.0	463.6
Transportation						
Firm Residential	99.2	107.5	116.6	116.2	115.8	115.5
Firm Commercial	19.2	22.2	24.6	25.2	25.4	25.4
Firm Industrial	0.0	0.0	0.0	0.0	0.0	0.0
Interruptible Residential	0.0	0.0	0.0	0.0	0.0	0.0
Interruptible Commercial	68.9	81.3	88.4	88.4	88.3	87.9
Interruptible Industrial	70.9	86.9	78.2	79.1	79.7	80.2
Electric Power Generation	2.6	2.6	2.6	2.6	2.6	2.6
Subtotal Transportation	260.8	300.5	310.4	311.5	311.8	311.6
TOTAL GAS REQUIREMENTS	588.5	689.7	747.5	759.5	767.8	775.2
Increase (Decrease)		101.2	57.8	12.0	8.3	7.4
Percent Change (%)		17.20%	8.38%	1.61%	1.09%	0.96%

Note: Firm volumes shown excludes CPA's firm obligations under its Standby Sales and Elective Balancing Services.

FORM-IRP-GAS-1B: PEAK DAY REQUIREMENTS
REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.
(volumes In Mmcf)

	Historical Data		Current Year	Three Year Forecast		
Index Year	-2	-1	0	1	2	3
Actual Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Firm Sales						
Retail Residential	229.2	275.4	307.0	315.3	320.1	325.1
Retail Commercial	96.7	111.9	128.3	130.9	134.1	136.7
Retail Industrial	0.7	0.8	0.7	0.7	0.7	0.7
Electric Power Generation	0.0	0.0	0.0	0.0	0.0	0.0
Exchanges with Other Utilities	0.0	0.0	0.0	0.0	0.0	0.0
Unaccounted for Gas	0.7	0.7	0.7	0.7	0.7	0.7
Company Use	0.4	0.4	0.4	0.4	0.4	0.4
Other	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Firm Sales	327.7	389.2	437.1	448.0	456.0	463.6
Interruptible Sales						
Retail	0.0	0.0	0.0	0.0	0.0	0.0
Electric Power Generation	0.0	0.0	0.0	0.0	0.0	0.0
Company's Own Plant	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Interruptible Sales	0.0	0.0	0.0	0.0	0.0	0.0
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Percent Change (%)		17.20%	8.38%	1.61%	1.09%	0.96%

Note: Firm volumes shown excludes CPA's firm obligations under its Standby Sales and Elective Balancing Services.

DEMAND FORECASTING METHODOLOGY AND ASSUMPTIONS

BASIC ASSUMPTIONS

Columbia Gas of Pennsylvania, Inc. (CPA) obtains historic and forecasted data for national, state and local economic and demographic concepts from IHS Inc (IHS). CPA obtains historic and forecasted data for energy efficiency concepts from Itron, Inc. (Itron). Both IHS and Itron are well-known and reputable firms in the business forecasting industry. These data are used in building econometric models that are used in the demand forecasts on Form 1A. The basis for the peak day demand forecast on Form 1B is explained in a separate section.

PENNSYLVANIA AND SERVICE AREA PROJECTIONS

CPA Economic Growth - CPA relies upon IHS's state-level and county-level forecasts of a series of economic variables, including number of households, housing starts, income, population, commercial employment, gross county product, and industrial production. These forecasts are consistent with IHS's national forecasts.

In the industrial sector, the Federal Reserve Board indexes of industrial production for the state of Pennsylvania are the key economic measures used to explain CPA's industrial gas demand. Historical values of these indexes are available at the two- through six-digit North American Industrial Classification System (NAICS) levels. Global Insight provides forecast values for these indexes.

CPA Energy Prices - Data to construct independent variables for the price of gas were obtained from Company resources: historical data were obtained from Company billing records, and forecast data were obtained from the Company financial planning model. In the residential sector, the price of natural gas is divided by the consumer price index to yield an inflation-adjusted price of gas. In the commercial and industrial sectors, the price of natural gas is adjusted for inflation with the GDP deflator.

RESIDENTIAL AND COMMERCIAL DEMAND FORECAST METHODOLOGY

The annual demand forecast for the residential and commercial classes of customers has two main components: the number of customers and the average gas use per customer (UPC). The analytical work that supports the annual demand forecast is based upon data accumulated for CPA's service territory. The forecast insights and trends from this analysis are then used as the basis to project demand for the company.

CUSTOMERS

Residential customers are divided into two groups: new construction and existing. Commercial customers are also divided into the same two groups.

Since existing customers occupy structures already built, their number cannot increase. The only forecasting question in regard to the number of customers in this category is the rate of attrition. An analysis of attrition is performed for CPA's existing customers. For the historic period, this is a straightforward calculation based on total customers and new customer data. For the forecast period, attrition is set at a recent, historical level.

The annual number of new customers depends on many factors. The housing market, the state of the economy, relative energy prices, age of equipment, and marketing effort by energy providers all are important. These factors are taken into account in the new customer forecast. The first part of this forecast is the three-year "grass roots" forecast provided by marketing staff. CPA marketing representatives make their projections of new customers in light of the energy and economic assumptions provided for CPA's use; but their forecasts are based primarily on their estimated budgets and interviews with customers, real estate developers and builders. It is the best method of obtaining an accurate short term forecast, because it uses specific, up-to-date local marketing information. For example, a marketing representative may have specific knowledge of a large residential development or new shopping center that is about to break ground. This can have a significant impact on small area forecasts in the short term and even in the longer term when its implications are carried forward. The new customer forecast beyond the first three years of the forecast period is derived from an econometric model of new customers developed by the Demand Forecasting (DF) group.

The econometric model of new construction customers specifies annual new construction customers as a function of annual housing starts and employment.

$$\text{New Construction Customers} = a_0 + \beta_1 \times \text{Housing Starts} + \beta_2 \times \text{Employment}$$

USE PER CUSTOMER

One econometric model of total UPC – the sum of both existing and new customers - is estimated for the total residential class, and one econometric model of total UPC is estimated for the total commercial class. Each model is monthly, allowing forecasts of July and August values from these models to provide the basis for calculating non-temperature-sensitive UPC and allowing forecasts of UPC values for the remaining months to provide the basis for calculating temperature-sensitive UPC.

The monthly econometric models specify actual UPC as a function of independent variables chosen from a set of variables representing real gas prices, economic conditions, gas-using equipment efficiency, monthly fluctuations in the intercepts (using binary variables), and weather. The real gas price variable is the deflated value of average tariff revenue per MCF. The residential and commercial UPC equations have the following form:

$$\ln(D) = a_0 + \beta_1 \times \ln(P) + \beta_2 \times \ln(RYPC) + \beta_3 \times \ln(RGCP) + \beta_i \times M_i + \beta_4 \times \ln(EFF) + \beta_5 \times \ln(HDD)$$

where:

ln	=	the natural log function
D	=	CPA monthly total UPC
a_n, β_n	=	*model coefficients*
M_i	=	a set of eleven binary variables to quantify the shifts in volumes for the models
EFF	=	an efficiency variable
P	=	real average price of natural gas
RYPC	=	real income per capita (residential model)
RGCP	=	real gross county product (commercial model)
HDD	=	heating degree days

VOLUMES

Gas volume is calculated monthly by multiplying forecasted UPC by forecasted customers. Existing customers are allocated according to historical average profiles derived from company data. New construction customers are allocated according to monthly new connection patterns observed in recent years. The temperature-sensitive UPC forecasts are summarized by customer type (existing and new) at the annual level and then distributed according to a historical profile that is based on usage level, billing cycle, and heating degree days. The non-temperature-sensitive UPC forecasts are also summarized by customer type at the annual level, and are then distributed according to billing cycle. Calendar month demands are obtained by adding an adjustment for unbilled volume.

Gas volume for one large commercial customer is forecasted separately by the Company's Large Customer group.

Transportation Volume

The models described thus far are used to forecast total throughput. This section describes models for forecasting transportation volume that is subtracted from the throughput forecast to arrive at tariff sales volume.

Forecasted Choice transportation volume is the product of the forecasts for customers and UPC. Choice customers are forecasted with a penetration model based on program experience to date and assumptions about the relative attractiveness of the program to marketers and customers. UPC for Choice customers is based on program performance to date and follows the forecast path from the class UPC model.

Traditional (non-Choice) transportation volume for the commercial class is forecasted based on forecasts of large transportation customers provided by the marketing department, past levels, and trend.

INDUSTRIAL FORECASTING METHODOLOGY

The forecast of CPA industrial throughput is based upon both economic analysis and customer interviews concerning expectations of future industrial gas demand. Individual customer contacts made by CPA's Industrial Marketing Department provide data consisting of monthly forecasts of demand. Special rate customers and large general service customers, comprising most of CPA's industrial volume, are contacted in these "grass roots" interviews. The economic analysis of total CPA industrial customer gas demand (both tariff and gas transportation service "GTS") is based upon an econometric forecasting model developed by the Demand Forecasting group.

The econometric model uses the data available for gas consumption, natural gas prices, aggregate prices, industrial production, employment, and weather. Forecasts of economic variables are obtained from Global Insight. The general functional form of the industrial model is shown below. The model is monthly:

$$\ln(D) = a_0 + \beta_1 \times \ln(P) + \beta_2 \times \ln(IPI) + \beta_3 \times \ln(EMP) + \beta_i \times M_i, \text{ where:}$$

ln	= the natural log function
D	= CPA industrial gas demand (tariff + GTS)
a_n, β_n	= model coefficients
M_i	= a set of eleven binary variables to quantify the monthly shifts in volumes
IPI	= the CPA sales-weighted composite industrial production index
P	= real average price of natural gas
EMP	= manufacturing employment

Transportation volume for the industrial class is forecasted based on forecasts of large transportation customers provided by the marketing department, past levels, and trend. Forecasted transportation volume is subtracted from the throughput forecast to arrive at tariff sales volume.

DESIGN DAY FORECASTING METHODOLOGY AND ASSUMPTIONS

Each year, a five-year estimate of the requirements anticipated under Columbia Gas of Pennsylvania, Inc's. (CPA) design day operating conditions is prepared to ensure that adequate supplies are contracted at a level so that CPA can fulfill its utility obligation to its firm customer requirements at Design Day Conditions. The projected demands, as generated in CPA's 2014 Design Day Forecast (DDF) and shown on Form 1B (attached), represent the sum total of CPA's Design Day Demand calculated at the Design Current Day Temperature, Design Prior Day Temperature, Design Current Day Wind Speed, and assume Design Day occurrence on a weekday for each of CPA's eight Pipeline Scheduling Points (PSPs).

Design Current Day Temperature results from the Gumbel Distribution of annual minimum temperatures for all available years of history through heating season 2007/2008 for the National Weather Service Stations located at Hagerstown, Maryland; Morgantown, West Virginia; and Harrisburg, Pittsburgh, and Bradford, Pennsylvania. These are the weather stations within or having proximity to CPA's service territory that are used to discern customers' sensitivities to the weather variables of temperature and wind speed. The Design Current Day Temperature is premised upon a risk level having a 1 in 15 probability of occurrence. That is, the probability is 6.7 percent, or 1 in 15, that any given winter will have one or more days with an average daily temperature equal to or colder than CPA's design temperature. CPA's company-wide Design Current Day Temperature is -5 degrees Fahrenheit.

Design Prior Day Temperature results from the mean temperature difference between historical cold days and their associated prior days. Cold days are defined as those that are no warmer than the Design Current Day Temperature plus 5 degrees Fahrenheit. This resultant average difference is then added to the Design Current Day Temperature to give Design Prior Day Temperature. CPA's company-wide Design Prior Day Temperature is 6 degrees Fahrenheit.

Consistent with the Design Prior Day Temperature methodology, the approach of using an average of cold days is used to establish Design Current Day Wind Speed. Because Wind Speed data has only been available since 1991/92, Design Current Day Temperature plus five degrees Fahrenheit does not give many observations for a representative average. Using Cold Days defined as 15 degrees plus Design Current Day Temperature provides more observations per station. CPA's company-wide Design Current Day Wind Speed is 11 mph.

These design conditions are developed for each of the aforementioned National Weather Service Stations used by CPA. The associated factors for each station are then weighted as a function of the firm demand associated with each weather station to arrive at the design conditions for each PSP and CPA in aggregate.

The DDF methodology has the following eight steps.

Step 1. Obtaining Actual Total Daily Demand

The first step in the preparation of the DDF is to obtain the actual total daily demand that was observed in the months of December through February from the most recent two heating seasons.

CPA derives the actual total daily demand by cumulating daily supply data from all sources. Based on twelve months ending December 2013, CPA has 96% of its total deliveries daily measured at the Point of Delivery (POD). The volumes that are monthly read are allocated to a daily volume using a base load / heat load allocation process. The daily volume for every POD is summarized to produce the actual total daily demand for each for each PSP.

Step 2. Obtaining Non-Firm Daily Demand

The second step is the calculation of the daily demand for CPA's industrial and commercial customers receiving services (sales and banking and balancing service) from the Company on a non-firm basis. Approximately 78% of CPA's total non-firm customer demand is subject to daily measurement. This percentage is based on the actual January 2014 throughput for all such customers. For those non-firm customers with monthly meter read capability, CPA estimates their daily consumption using a base load / heat load allocation process.

Step 3. Calculation of Daily Firm Demand

Daily Firm Demand is calculated at the PSP level by subtracting the daily non-firm customer (industrial and commercial) demand, as described above, from the actual total daily demand. The resultant daily demand is considered to be firm customer demand, for supply planning purposes, and is utilized in the regression process described below.

CPA has an additional firm obligation under its Standby Service contracts and Elective Balancing Service (EBS) contracts with transportation customers. This is an obligation that CPA stands ready to fulfill on any given day, and is considered in CPA's supply/capacity portfolio. For this reason it is categorized separately from the previously described daily system firm demand. Both Standby Service and EBS projections for each forecast season are held constant at the aggregate customer contract level at the time the DDF is prepared.

Step 4. Regression of Three Demand Components

Using NiSource's Demand Forecast System (DFS) software, regressions are made to obtain coefficients for each PSP, for the following demand components:

1. Daily Firm Demand;
2. Daily Industrial Customer Non-firm Demand; and
3. Daily Commercial Customer Non-firm Demand.

Daily demand data for the months of December, January, and February from the past two heating seasons is analyzed and the three demand components are regressed against a group of four explanatory variables:

1. Current Day Temperature: the average daily temperature for the current day;
2. Prior Day Temperature: the average daily temperature for the prior day;
3. Wind Speed: the average daily wind speed for the current day; and
4. Day Type: weekdays, weekends, and holidays. The holidays are the period December 24

through January 1.

The analysis is performed twice. First, CPA uses all observed days during December through February, and then just those days having average temperatures below 31 degrees Fahrenheit to better capture customer responsiveness to colder temperatures.

Step 5. Design Actual

The PSP regressed coefficients are then applied to the PSP Design Day Conditions to determine the resulting Design Actual demand. The purpose of calculating the "Design Actual" demand is to quantify, based on actual experience, what the Design Day Demand would equate to if Design Day Conditions had occurred for the subject period of time. CPA uses the 2013/14 Design Actual for firm (exclusive of Standby Service and EBS quantities) and total (sum of firm plus non-firm) demand along with prior winters' Design Actuals as inputs in the growth process to project the 2014/15 - 2018/19 Design Day Demand.

Step 6. Determination of Design Day Demand by Revenue Class

Once the regressions have been performed and the Firm Design Actual and the two (commercial and industrial) non-firm customers' Design Actual demands are known, the allocation of demand types within a revenue class is performed.

Four steps are performed to allocate Firm Demand. In **Step 6a**, the classification Other is calculated. Other includes two categories, Company Use, and Unaccounted-For Gas. Company Use Design Day load is projected to be 1/20th of the January requirement from the 2014 Gas Estimate. The Design Day load of Unaccounted-For Gas is 1/365th of the annual Unaccounted-For Gas load from the Gas Estimate. Other Demand, like Residential Demand, is entirely firm; i.e., it contains no non-firm component.

In **Step 6b**, Industrial Firm Sales is developed by regression analysis of the estimated daily industrial firm sales demand of the most recent winter (derived from monthly billing data for December 2013 through February 2014) against the gas-day average temperature. The design temperature is then applied to the regression equation to arrive at the design industrial firm sales demand.

In **Step 6c**, the remainder of Firm Demand (Firm Demand less Industrial Firm Demand less Other) is allocated to Residential and Firm Commercial based on the estimates of residential and commercial demands as found in the Gas Estimate inclusive of Choice. Once the allocation is complete, the Firm Demand is equal to the sum of the revenue classes' (Residential, Commercial, Industrial, and Other) firm demand component.

In **Step 6d**, the Firm Demand is then further categorized between sales and Choice customer demand. The Choice demands are derived from the input used in the development of CPA's 2014 Gas Estimate. The total Choice Design Day Demand is anticipated to be 149.5 MDth by the last heating season (2018/19) of the 2014 forecast.

Step 7. Design Day Forecast

Several years of the historical Design Actual Demands for each PSP are utilized as the basis for the regressions to determine the Design Day Forecast. The analyses at the PSP level is needed for planning purposes and allows for identifying variances in customer demand over the historical period studied. In the process, the impact on the annual Design Actual Demands of three variables is determined. Those variables are:

(1) Customer count in the month of January;
(2) Actual weather in the two months (December and January) when the design peak day is most likely to occur; and
(3) Actual gas costs.

Note that for the purpose of forecasting Firm Design Day Demand, the gas cost considered is the forecasted November PGC price. For projecting Non-Firm Design Day Demand, the forecasted January NYMEX price is utilized.

Step 8. Adjustments to Forecast

The 2013 Design Day Forecast includes two adjustments to capture occurrences not entirely reflected in the historical input data as follows:

(1) In recognition of prevailing economic conditions, the forecast of CPA's firm customer demand for the first winter (2013-2014) does not reflect the full impact, in terms of increased customer demand, that would otherwise be expected in response to CPA's November 2013 PGC rates based on the analyses of historical price/demand relationships. This occurs in consideration that customers may have less disposable income than historically, that there may be more of a lagged effect by customers than historically experienced in responding to lower prices, and that some conservation measures taken by customers are of a more permanent nature; and

(2) The forecast of CPA's non-firm customer demand has given consideration to a current projection of existing and expected new customer load.

Section 59.81 **Forms IRP-Gas 2A, 2B and 2C - Annual and Peak Day Energy Resources, Transmission and Storage Contracts**

The forecast of energy sources shall indicate sources of all presently available and new supplies that the utility estimates will become available, displayed by component parts.

Response: Please see the attached documentation and forms.

FORM-IRP-GAS-2A: NATURAL GAS SUPPLY
TABLE 1: ANNUAL SUPPLY
REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.
(volumes In Mmcf)

	Historical Data		Current Year	Three Year Forecast		
Index Year	-2	-1	0	1	2	3
Actual Year	2013	2014	2015	2016	2017	2018
Gas Supply for Sales Service						
Supplier A	68.0	1,277.0	6,806.0			
Supplier B	0.0	369.0	1,084.0			
Supplier C	973.0	1,679.0	561.0			
Supplier D	4,442.0	5,527.0	0.0			
Supplier E	0.0	4,117.0	0.0			
Supplier F	7,709.0	3,051.0	0.0			
Supplier G	0.0	1,916.0	0.0			
Supplier H	582.0	1,507.0	0.0			
Spot Purchases	22,530.0	16,354.0	23,762.0	32,059.0	32,039.0	31,590.0
Storage Withdrawals	22,963.0	21,405.0	19,327.0	19,177.0	19,207.0	19,465.0
LNG/SNG/Propane Purchases						
Company Production						
Local Purchases	237.0	237.0	241.0	240.0	240.0	240.0
Exchanges						
Other						
Total Gas Supply for Sales	59,504.0	57,439.0	51,781.0	51,476.0	51,486.0	51,295.0
Total Transportation Service	43,295.0	47,161.0	43,989.0	44,661.0	44,622.0	48,935.0
TOTAL SALES, GAS SUPPLY AND TRANSPORTATION SERVICE	102,799.0	104,600.0	95,770.0	96,137.0	96,108.0	100,230.0
Deductions						
Curtailments						
Underground Storage Injections	23,834.0	22,553.0	20,214.0	19,881.0	19,912.0	19,772.0
LNG Liquefaction						
Sales to other LDCs						
Off-System Sales						
Total Deductions	23,834.0	22,553.0	20,214.0	19,881.0	19,912.0	19,772.0
NET GAS SUPPLY	78,965.0	82,047.0	75,556.0	76,256.0	76,196.0	80,458.0

FORM-IRP-GAS-2A: NATURAL GAS SUPPLY
TABLE 2: PEAK DAY SUPPLY
REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.
(volumes In Mmcf)

	Historical Data		Current Year	Three Year Forecast		
Index Year	-2	-1	0	1	2	3
Actual Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Gas Supply for Sales Service						
Columbia Gas Transmission 1/	83.3	74.0	52.7	63.8	71.8	79.0
Tennessee	17.9	17.9	18.2	18.2	18.2	18.2
Texas Eastern	17.9	17.9	18.1	18.1	18.1	18.1
National Fuel	3.9	4.0	4.0	4.0	4.0	4.0
Spot Purchases	0.0	0.0	0.0	0.0	0.0	0.0
Storage Withdrawals	204.0	274.7	343.5	343.2	343.3	343.6
Peaking Supply	0.0	0.0	0.0	0.0	0.0	0.0
Company Production	0.0	0.0	0.0	0.0	0.0	0.0
Local Purchases	0.7	0.7	0.7	0.7	0.7	0.7
Exchanges with other LDCs	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0
Total Gas Supply for Sales	327.7	389.2	437.1	448.0	456.0	463.6
Total Transportation Service 2/	260.8	300.5	310.4	311.5	311.8	311.6
TOTAL SALES, GAS SUPPLY AND TRANSPORTATION SERVICE	588.5	689.7	747.5	759.5	767.8	775.2
Deductions						
Curtailments	0.0	0.0	0.0	0.0	0.0	0.0
Underground Storage Injections	0.0	0.0	0.0	0.0	0.0	0.0
LNG Liquefaction	0.0	0.0	0.0	0.0	0.0	0.0
Sales to other LDCs	0.0	0.0	0.0	0.0	0.0	0.0
Total Deductions	0.0	0.0	0.0	0.0	0.0	0.0
NET GAS SUPPLY	588.5	689.7	747.5	759.5	767.8	775.2

1/ Excludes capacity offered to Choice marketers
2/ Total Transportation Service includes "Choice" balancing provided by CPA storage withdrawals.

FORM-IRP-GAS-2B: NATURAL GAS TRANSPORTATION [1]
REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.
(volumes In Mmcf)

	Historical Data				Current Year		Three Year Forecast					
Index Year	-2		-1		0		1		2		3	
Actual Year	2013		2014		2015		2016		2017		2018	
City Gate Transportation Contracts:	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
Columbia Gas Transmission Corporation	29,011.8	79.5	29,055.0	79.6	29,383.0	80.5	29,463.5	80.5	29,383.0	80.5	29,383.0	80.5
Columbia Gas Transmission Corporation	6,215.8	17.0	6,225.0	17.1	6,295.3	17.2	6,312.6	17.2	6,295.3	17.2	6,295.3	17.2
Columbia Gas Transmission Corporation	4,520.6	12.4	4,527.4	12.4	4,578.5	12.5	4,591.0	12.5	4,578.5	12.5	4,578.5	12.5
Columbia Gas Transmission Corporation	4,520.0	12.4	4,526.7	12.4	4,577.8	12.5	4,590.3	12.5	4,577.8	12.5	4,577.8	12.5
Texas Eastern Pipeline Co.	3,984.6	10.9	3,990.6	10.9	4,035.6	11.1	4,046.7	11.1	4,035.6	11.1	4,035.6	11.1
Tennessee Gas Pipeline Co.	3,965.3	10.9	3,971.2	10.9	4,016.0	11.0	4,027.0	11.0	4,016.0	11.0	4,016.0	11.0
Tennessee Gas Pipeline Co.	2,576.6	7.1	2,580.5	7.1	2,609.6	7.1	2,616.7	7.1	2,609.6	7.1	2,609.6	7.1
Texas Eastern Pipeline Co.	2,542.7	7.0	2,546.5	7.0	2,575.3	7.1	2,582.3	7.1	2,575.3	7.1	2,575.3	7.1
National Fuel Gas Supply	1,438.8	3.9	1,441.0	3.9	1,457.3	4.0	1,461.2	4.0	1,457.3	4.0	1,457.3	4.0
Columbia Gas Transmission Corporation	610.3	1.7	611.2	1.7	618.1	1.7	619.8	1.7	618.1	1.7	618.1	1.7
TOTAL	59,386.6	162.7	59,475.0	162.9	60,146.4	164.8	60,311.2	164.8	60,146.4	164.8	60,146.4	164.8
Upstream Transportation Contracts:												
Columbia Gulf Transmission Corp.	14,792.6	40.5	14,814.6	40.6	14,981.8	41.0	15,022.9	41.0	14,981.8	41.0	14,981.8	41.0
Tennessee Gas Pipeline	5,697.1	15.6	5,705.5	15.6	5,770.0	15.8	5,785.8	15.8	5,770.0	15.8	5,770.0	15.8
Texas Eastern Pipeline Co.	1,044.9	2.9	1,046.4	2.9	1,058.3	2.9	1,061.2	2.9	1,058.3	2.9	1,058.3	2.9
TOTAL	21,534.5	59.0	21,566.6	59.1	21,810.0	59.8	21,869.8	59.8	21,810.0	59.8	21,810.0	59.8
Storage-Related Transportation Contracts:												
Columbia Gas Transmission Corp.	116,065.0	424.4	116,237.8	425.0	117,549.9	429.8	117,979.7	429.8	117,549.9	429.8	117,549.9	429.8
Equitrans Pipeline Company	1,857.7	17.8	1,395.3	13.3	1,411.1	13.5	1,411.1	13.5	1,411.1	13.5	1,411.1	13.5
Dominion Transmission	841.5	5.6	842.8	5.6	852.3	5.6	857.9	5.6	852.3	5.6	852.3	5.6
Dominion Transmission			674.2	4.5	681.8	4.5	686.4	4.5	681.8	4.5	681.8	4.5
Dominion Transmission	420.8	2.8	421.4	2.8	426.2	2.8	429.0	2.8	426.2	2.8	426.2	2.8
TOTAL	119,185.0	450.5	119,571.5	451.2	120,921.3	456.3	121,364.1	456.3	120,921.3	456.3	120,921.3	456.3

1 Rank contracts in order of magnitude for the current year, noting the transportation provider and termination date for each contract reported.
Reporting should proceed along rank ordering until 75% of total is accounted for, or until ten contracts have been listed, whichever occurs first.

FORM-IRP-GAS-2B: NATURAL GAS TRANSPORTATION
REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.
(volumes In Mmcf)

	Contract Expiration Date
City Gate Transportation Contracts:	
Columbia Gas Transmission Corporation	10/31/19
Columbia Gas Transmission Corporation	10/31/16
Columbia Gas Transmission Corporation	10/31/16
Columbia Gas Transmission Corporation	10/31/17
Texas Eastern Pipeline Co.	10/31/17
Tennessee Gas Pipeline Co.	10/31/19
Tennessee Gas Pipeline Co.	10/31/17
Texas Eastern Pipeline Co.	10/31/17
National Fuel Gas Supply	Month to Month
Columbia Gas Transmission Corporation	10/31/19
Upstream Transportation Contracts:	
Columbia Gulf Transmission Corp.	10/31/19
Tennessee Gas Pipeline	10/31/19
Texas Eastern Pipeline Co.	10/31/17
Storage-Related Transportation Contracts:	
Columbia Gas Transmission Corp.	3/31/20
Equitrans Pipeline Company	3/31/17
Dominion Transmission	3/31/18
Dominion Transmission	03/31/24
Dominion Transmission	10/31/19

FORM-IRP-GAS-2C: NATURAL GAS STORAGE [1]
REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.
(volumes In Mmcf)

	Historical Data				Current Year		Three Year Forecast					
Index Year	-2		-1		0		1		2		3	
Actual Year	2013		2014		2015		2016		2017		2018	
	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
Columbia Gas Transmission Corporation	23,538.1	424.4	23,573.1	425.0	23,839.3	429.8	23,839.3	429.8	23,839.3	429.8	23,839.3	429.8
Equitrans Pipeline Company	1,857.7	17.8	1,395.3	13.3	1,411.1	13.5	1,411.1	13.5	1,411.1	13.5	1,411.1	13.5
Dominion Transmission	874.2	8.4	875.5	8.4	885.4	8.5	885.4	8.5	885.4	8.5	885.4	8.5
Dominion Transmission			223.3	4.5	225.8	4.5	225.8	4.5	225.8	4.5	225.8	4.5
TOTAL	26,270.0	450.5	25,844.0	446.7	26,361.5	456.3	26,361.5	456.3	26,361.5	456.3	26,361.5	456.3

1 Rank contracts in order of magnitude for the current year, noting the transportation provider and termination date for each contract reported. Reporting should proceed along rank ordering until 75% of total is accounted for, or until ten contracts have been listed, whichever occurs first.

	Contract Expiration Date
Columbia Gas Transmission Corporation	03/31/20
Equitrans Pipeline Company	03/31/17
Dominion Transmission	03/31/18
Dominion Transmission	03/31/24

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2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

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COMMONWEALTH KEYSTONE BUILDING
HARRISBURG PA 17120-0200

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