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M-2015-2460

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May 27, 2015

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 Summary Report, and Forms 3 through 9.

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.

Verv truly yours

Theodore J. Gatlagher

/kak Enclosures

cc: Paul Diskin/Bureau of Technical Utility Services Tanya J. McCloskey/Office of Consumer Advocate John R. Evans/Office of Small Business Advocate Johnnie Simms/Bureau of Investigation and Enforcement RECEIVET 2015 HAY 29 AH 10: 47 2015 HAY 29 AH 10: 47 SECRETARY'S DUREAU

ANNUAL RESOURCE PLANNING REPORT

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Columbia Gas of Pennsylvania, Inc.

2015 Summary Report

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BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

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

2015 Annual Resource Planning Summary Report



Filed: June 2015

Information Submitted in Compliance with and Pursuant to Title 52 Pennsylvania Code Sections 59.81-59.84 COLUMBIA GAS OF PENNSYLVANIA, INC. Annual Resource Planning Summary Report

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INTRODUCTION

By Order entered January 11, 1996 the Pennsylvania Public Utility Commission (PUC) adopted final regulations (52 PA Code §§ 59.81 - 59.84) which set forth revised requirements for filing annual resource planning reports (the Plan). The Plan submitted represents Columbia Gas of Pennsylvania's (CPA or the Company) belief that integrated resource planning (IRP) is a workable approach to utility planning.

This plan summary contains historical data and projections for annual, winter, and peak day supply to meet projected customer requirements in a least cost manner, while ensuring adequate and reliable service. It is organized into the following 6 sections:

- I. Columbia's Overall Approach to Integrated Resource Planning
- II. Demand Forecasting Methodology and Assumptions
- III. Design Day Forecasting Methodology and Assumptions
- IV. Three Year Resource Implementation Plan
- V. CPA Service Territory Description and Map
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I. COLUMBIA'S OVERALL APPROACH TO INTEGRATED RESOURCE PLANNING

CPA views integrated resource planning (IRP) as part of an approach to utility management energy resource decision-making. This involves the integration of a number of planning processes; the unbiased evaluation of both supply-side and demand-side management (DSM) strategies; and the explicit recognition of the changing business, regulatory and competitive environments within which local distribution company (LDC) managers must plan and operate.

A successful IRP program should give sufficient consideration to an LDC's obligation to provide adequate and reliable service to its customers, and its role as supplier of last resort. The focus of IRP activities should be the optimal balance of low total societal costs associated with energy consumption; low total customer energy bills; low average system-wide unit costs; enhanced shareholder value; and mitigated environmental impact of energy resource decisions.

CPA also believes that in order to maximize the benefits to the energy consumers in the state of Pennsylvania, the practice of a comprehensive approach to IRP should consider end-uses and the optimal selection of fuel source based on consideration of conserving resources, energy and improving air quality.

CPA's overall IRP objective is to obtain a resource mix consisting of supply-side and demand-side resource options that satisfies customers' energy needs in a manner that balances costs, reliability and environmental impacts in both the short and long term.

THE ROLE OF IRP

Integrated resource planning began in the 1970s as a response to changes in the electric utility industry. Increased uncertainty and risk caused by intermittent demand growth, increased competition from sources such as cogeneration, and risks associated with constructing new generation facilities caused electric utilities and regulators to re-evaluate traditional planning processes. In addition, there was greater diversity in energy resource options which challenged the traditional utility planning assumption that energy demand was a "given." Faced with many of the same concerns regarding risks, uncertainty and the need to consider a broader range of energy resource options, a number of regulatory commissions and natural gas utilities have adopted the IRP process.

Natural gas is a fuel of choice, facing competition from alternate energy sources for almost all enduses. As such, the natural gas industry has historically operated in a competitive environment. This level of competition has increased for LDCs. Economic climates along with other factors such as increasing gas costs have caused energy consumers, on a national and global level, to place greater emphasis on controlling energy costs. Deregulation and increased access to alternate energy sources for end-users have caused greater competition in the energy marketplace. Technological improvements have resulted in greater end-use efficiencies. This, combined with increased environmental awareness on a global scale has led to the advancement of energy conservation and energy efficiency. This has resulted in stricter codes and standards for equipment, appliances, buildings and homes. As these energy-efficient appliances, codes and standards have been applied through the normal building and appliance replacement life-cycle, customers have been given an unprecedented ability to reduce household energy consumption.

Integrated resource planning provides a mechanism to address the new challenges of our industry. Properly developed, IRP pulls together a number of traditional planning processes, explicitly recognizes and accounts for uncertainties, gives equal considerations to supply- and demand-side resource options and recognizes that the integrated resource plan is a *living document* that is updated and modified to reflect changes in relevant parameters and increased knowledge and experience.

DSM

Certain DSM activities can be an important element of utility resource management, especially when targeted to specific, well-defined applications such as those involving low-income customers. Demand side planning is the process of identifying, evaluating and selecting the most effective means of managing customer requirements for natural gas. Within the context of IRP, DSM represents one broad category of resource options with which current and future energy requirements can be met. Some potential benefits of implementing appropriate DSM programs could be enhanced customer value, lower total societal costs, lower consumer energy bills, increased overall resource energy and end-use efficiency, improved overall system efficiency and utilization, reduced environmental degradation and the promotion of economic development.

II. 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

<u>CPA Economic Growth</u> - 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.

<u>CPA Energy Prices</u> - 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.

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
an, Bn	= model coefficients
Mi	= a set of eleven binary variables to quantify the shifts in volumes for the models
EFF	= an efficiency variable
Р	= 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)
an, ßn	= model coefficients
Mi	= a set of eleven binary variables to quantify the monthly shifts in volumes
IPI	= the CPA sales-weighted composite industrial production index
Р	= 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.

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III. 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.

<u>Design Prior Day Temperature</u> 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 **P**oint of **D**elivery (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 2014 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 (2014-2015) does not reflect the full impact, in terms of increased customer demand, that would otherwise be expected in response to CPA's November 2014 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.

IV. THREE YEAR RESOURCE IMPLEMENTATION PLAN

PLANNING USING SUPPLY/DEMAND BALANCES

Using contractual storage and transportation capacities, and guidelines described in this exhibit, Columbia Gas of Pennsylvania, Inc. (CPA) plans annual, seasonal, and peak day supplies to serve firm customer requirements. For each of the colder, normal, and warmer weather demand scenarios, a plan identifies monthly and daily sources of gas. For each scenario, the total supply is a mixture of transportation, storage, and any peaking supplies. Forms 2A, 2B and 2C (attached) have been developed from the plan information for the normal weather scenario. Form 3 (attached) summarizes the Company's customer forecast.

CPA's "design" plan is based on the colder weather scenario and customer demand corresponding to 1 in 15 risk peak day temperature, 1 in 10 risk late-winter-days temperatures, and 1 in 10 risk winter season degree days. Late winter days are recognized to assure supply adequacy, since contractual storage withdrawal capacity decreases as storage inventory is reduced late in the winter.

CPA's supply/demand balances result from using SENDOUT, a PC-based decision support modeling system developed by Ventyx.

STORAGE INJECTIONS, WITHDRAWALS, AND RATCHETS

Storage provides a buffer between demand and supply, both on a seasonal and daily basis. CPA constructs its target injection pattern recognizing end of winter balances, flexibility requirements, gas supply prices and applicable storage injection limitations.

CPA constructs its winter storage withdrawal schedule to reflect daily withdrawal capacity decreasing or ratcheting down during the later parts of the winter season. When the inventory remaining in storage falls below 30% of seasonal contract capacity, daily withdrawal capacity is reduced to 80% of contract maximum. Daily withdrawal capacity declines to 65% of this maximum when storage inventory falls below 20% of seasonal capacity, and finally to 50% of maximum when inventory falls below 10%. CPA determines the largest demand it can serve with its available resources after each ratchet, and then determines the corresponding temperature at which this demand would be expected to occur. Finally, CPA determines the 10 percent risk date for that temperature. CPA then maintains sufficient inventory to postpone each occurrence of ratchet until that date. The risk level of 10 percent means that on average, the design temperature would occur after the design date one winter in ten.

CPA's supply plan assumes the availability of 96-97 percent of the seasonal contract capacity during the November through March winter season because of the following:

- (1) CPA enters the winter with roughly 1-2 percent of storage capacity unfilled to allow for storage injections on any warm days in early winter, and
- (2) CPA reserves roughly 2 percent of storage inventory at the end of the traditional winter season for withdrawal on cold April days.

DAILY BALANCING

CPA must balance flowing supplies delivered to its distribution system daily with varying customer demands. CPA uses the flexibility provided by storage to provide the majority of this daily balancing

requirement. On mild days and weekends with reduced demand, CPA may inject excess scheduled flowing supplies into its storage accounts. On cold days, when customer demand exceeds the scheduled flowing volumes, CPA will withdraw gas from its storage accounts. CPA's storage contracts have both daily injection and withdrawal limits. To the extent the daily balancing opportunities provided by storage are insufficient to meet the potential demand swings of customers, CPA may reduce or "swing" on its supply contracts.

PEAK DAY SUPPLY BALANCE

As mentioned previously, CPA maintains minimum firm capacity rights to protect for a 1 in 15 design peak day to ensure it can reliably satisfy its firm obligations. This includes capacity for PGC customers, Choice customers, Enhanced Balancing Service (EBS) Option 1 and Standby Service. CPA does not consider interruptible gas distribution service customer volumes as reliable Peak Period capacity for its firm demand. Therefore, no interruptible transportation is used for this balance.

LOCAL GAS

During Order 636 restructuring, Columbia Gas Transmission LLC (TCO) assigned CPA Firm Transportation capacity with Appalachian receipt points. CPA must fill this capacity or lose deliverability to nearby markets. CPA fills the majority of the assigned TCO Appalachian capacity with purchases from marketers and aggregators, with the balance filled by purchases from small producers. CPA may also purchase gas supplies from small local producers with wells located near CPA's facilities that deliver gas directly to CPA.

DEMAND SIDE RESOURCES

CPA currently operates two conservation programs as outlined in Form 5 (attached). They are the WarmWise Low-Income Usage Reduction Program (LIURP) and WarmWise Audits & Rebates program. Forms 6-9 attached contain program summary information and the cost-benefit analysis of LIURP and WarmWise Audits & Rebates.

CPA will continue implementing its residential energy efficiency programs, and will monitor the need for additional demand side resources through its Integrated Resource Planning Process.

V. CPA SERVICE TERRITORY DESCRIPTION AND MAP

A description of CPA's service territory and map are attached.

DESCRIPTION OF TERRITORY

ADAMS COUNTY

Abbottstown Arendtsville Aspers Bendersville **Berwick Township** Biglerville Butler Township Caledonia Cashtown Conewago Township* Cumberland Township East Berlin Fairfield Favetteville Franklin Township Freedom Township Germany Township Gettysburg Hamilton Township Hamiltonban Township Hemptom Littlestown McSherrystown* Menallen Township Mt. Joy Township Mt. Pleasant Township New Oxford **Oxford Township Reading Township** Strabane Township Table Rock Two Taverns Tyrone Township Union Township

ALLEGHENY COUNTY

The Company is certified to serve in all cities, boroughs and townships in Allegheny County.

ARMSTRONG COUNTY

Distant Hovey Township Madison Township Mahoning Township McWilliams New Salem Oakland Oak Ridge Parker City Perry Township Red Bank Township South Bethlehem

BEAVER COUNTY

The Company is certified in serve in all cities, boroughs and townships in Beaver County.

BEDFORD COUNTY

Cumberland Valley Township Londonderry Township Mann Township Southampton Township State Line

BUTLER COUNTY

Adams Township Allegheny Township Annandale Annisville Brady Township Bruin Center Township Cherry Township Clay Township Concord Township Cranberry Township

BUTLER COUNTY (continued)

Criders Corners Deegan Eau Claire Fairview Fairview Township Fallowfield Township Forestville Franklin Township Harrisville Karns Citv ** Marion Township Mercer Township Muddy Creek Township North Washington Parker Township Slippery Rock Township Valencia Valencia Township Washington Township West Liberty Wick Worth Township

CENTRE COUNTY ***

Bellefonte Benner Township Boggs Township Burnside Township College Township Ferguson Township Harris Township Patton Township Potter Township Snow Shoe Township Spring Township State College Union Township

* Territory formerly served under Tariff Gas-Pa. P.U.C. No. 7.

** Limited to industrial service to Permanent Service Identification (PSID) 400473084.

*** Territory formerly served under Tariff Gas-Pa. P.U.C. No. 6.

(C) Indicates Change

(C)

(C)

DESCRIPTION OF TERRITORY (Continued)

CHESTER COUNTY

Coatesville*

CLARION COUNTY

Ashland Township **Beaver Township** Callensburg Climax **Dutch Hill** Elk City Elk Township Fairmont City Foxburg Hawthorne Huey Knox Lamartine Lawsonham Leatherwood Licking Township Madison Township Mayport Monroe New Bethlehem Perry township Perryville Porter Township Red Bank Township **Richland Township** Rimersburg Salem Salem Township Shippenville St. Petersburg Toby Township **Turkey City Turnip Hole** Wentlings West Freedom West Monterey

CLEARFIELD COUNTY

Burnside Township Jordon Township** Union Township

ELK COUNTY

Highland Township Nansen Russell city

FAYETTE COUNTY

The Company is certified to serve in all cities, boroughs and townships in Fayette County.

FRANKLIN COUNTY

Antrim Township Caledonia Greencastle Greene Township Guilford Township Mercersburg Mont Alto Montgomery Township Nunnery Peters Township Quincy Quincy Township Shady Grove Washington Township Waynesboro

FULTON COUNTY

Bethel Township Thompson Township Union Township

GREENE COUNTY

The Company is certified to serve in all cities, boroughs and townships in Greene County.

INDIANA COUNTY

Center Township*** Cherryhill Township** Clymer White Township***

JEFFERSON COUNTY

Beaver Township Clover Township Heath Township Iowa Knox Township Pine Creek Township Polk Township Ringgold Township Rose Township Summerville Union Township Warsaw Township Winslow Township

Limited to industrial service to Permanent Service Identification (PSID) 400495160.

** Limited to industrial service to Permanent Service Identification (PSID) 500254711 and 500254712.

*** Limited to service to customers located within the industrial park owned by Indiana County Industrial Development Authority and Indiana County Development Corporation.

(C) Indicates Change

(C) (C)

(C)

DESCRIPTION OF TERRITORY (Continued)

LAWRENCE COUNTY

Bessemer **Big Beaver Township** Chewton Ellport Ellwood City Energy Harlansburg Hickory Township Jovce Little Beaver Township Mt. Jackson Meshannock Township New Castle North Beaver Township Perry Township Princeton Scott Township Shenango Township Slippery Rock Township South New Castle **Taylor** Township Union Township Wampum Wayne Township Wurtemburg

McKEAN COUNTY

Bradford Bradford Township Custer City Dallas City Degolía Derrick City Foster Brook Foster Township Lafayette Township Lewis Run Mt. Alton Tune

MERCER COUNTY

Liberty Township North Liberty

SOMERSET COUNTY

Addison Township Berlin Brothers Valley Township Elk Lick Township Greenville Township Meyersdale Salisbury Somerset Somerset Somerset Township Southampton Township Summit Township

VENANGO COUNTY

Clintonville Clinton Township Dotter Emlenton Freedom Irwin Township Mariasville Nickleville Pittsville Richland Township Rockland Township Scrubgrass Township

WARREN COUNTY

Conewango Township Glade Township Mead Township Pleasant Township Russell Shefield township Starbrick Warren

WASHINGTON COUNTY

The Company is certified to serve in all cities, boroughs and townships in Washington County.

WESTMORELAND COUNTY

Alverton Ardara Buzzardtown Cereal Circleville Coal Hollow Collinsbura Cowansburg East Huntingdon Township Eldora Fellsburg Fells Chapel Foxtone Grapeville Gratztown Hahntown Hempfield Township Herminie **Irwin** Jeannette Lowber Madison Marchland Monessen Mt. Pleasant Mt. Pleasant Township North Huntington Township Penalyn Penn Penn Township Rilton **Rostrover Township** Ruffsdale Rural (Scottdale) Scottdale Sewickley Township Shafton Smithton South Huntingdon Township Stewartsville Straw Pump Sutersville Tarr Unity Township West Newton Youngwood

DESCRIPTION OF TERRITORY (Continued)

YORK COUNTY *

YORK COUNTY (continued)

Carroll Township Codorus Township** Conewago Township Dallastown Dillsburg Dover Dover Township East Hopewell Township East Manchester Township East Prospect Fawn Township Glen Rock Hallam Hallam Township Hanover Hopewell Township Jackson Township Jacobus Jefferson Loganville Lower Chancefore Township Lower Windsor Township Manchester Manchester Township Manheim Township Mount Wolf Newberry Township New Freedom North Codorus Township North York Paradise Township Penn Township Railroad Red Lion Seven Valleys Shrewsburg Shrewsburg Township Springettsbury Township Springfield Township Spring Garden Township Spring Grove Stewartstown

Warrington Township Washington Township Wellsville West Manchester Township West Manheim Township West York Windsor Windsor Township Wrightsville Yoe York Yorkana York Haven York New Salem York Township

 Territory formerly served under Tariff Gas – Pa. P.U.C. No. 7 with the exception of Codorus and Manheim Townships and portions of East Manchester, Hallam, Manchester and Penn Townships.
Initial to industrial comises to Permeasure Service Identification (PSID) 400472422

** Limited to industrial service to Permanent Service Identification (PSID) 400472432.

(C) Indicates Change

(C)



COLUMBIA OF PENNSYLVANIA, INC. Annual Resource Planning Summary Report

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

	Historic	cal Data	Current Year		Three Year Forecas	t
Index Year	-2	-1	0	1	2	3
Actual Year	2013	2014	2015	2016	2017	2018
Firm Sales .	ĺ	[
Retail Residential	22,812	24,948	21,761	21,754	21,665	21,583
Retail Commercial	9,176	10,012	9,302	9,337	9,405	9,437
Retail Industrial	231	232	226	226	226	226
Electric Power Generation	1	1				1 1
Exchanges with Other Utilities	1	1				1
Unaccounted for Gas	- 3,368	(389)	220	220	220	219
Company Use	83	83	58	58	58	58
Subtotal Firm Sales	35,670	34,886	31,567	31,595	31,574	31,523
Interruptible Sales	l . '					
Retail	0	l o'	0	0	0	l 0
Electric Power Generation	l 0'	0	0	0	0	l 0
Company's Own Plant	1	1			-	1
Subtotal Interruptible Sales	0	0	0	0	0	0
SUBTOTAL FIRM AND INTERRUPTIBLE						
SALES:	35,670	34,886	31,567	31,595	31,574	31,523
Transportation						
	10.004	11 150	40.000	10.014	0.084	0.061
	1 990	0.044	10,000	10,014	9,904	9,301
Film Commercial	1,000	2,211	1,970	2,023	2,029	2,034
Fiffi Incostrat						
	11.000	11 970	10 661	11 110	44 407	11 147
	20.072	21 792	20,950	21.020	20,000	20,000
Electric Rower Generation	20,072	130	20,650	21,020	20,300	20,999
Subtotal Transportation	43 295	47 161	43 989	44 661	434	434
TOTAL GAS REQUIREMENTS	78 965	82 047	75 556	76 256	76 196	76 158
		2,011	(0,000	700	10,100	10,100
		3,062	(6,491)	/00	(00)	(38
rercent Change (%)	1	3.9	(7.9)	J 0.9	(0.1)	(0.0)

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

	Historic	al 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			l l			
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
Sublotal 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 of	obligations under its Sta	andby Sales and Electiv	ve Balancing Services.			

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

	Historic	al 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	44,635.0
TOTAL SALES, GAS SUPPLY AND						
TRANSPORTATION SERVICE	102,799.0	104,600.0	95,770.0	96,137.0	96,108.0	95,930.0
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	76,158.0

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

•

	Historic	al 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)

		Historica	I Data		Current	Year			Three Year	Forecast		
Index Year	-2		-1		0		1		2		3	
Actual Year	2013		201	4	201	5	201	6	201	7	201	8
City Gate Transportation Contracts:	<u>Annual</u>	Peak	<u>Annual</u>	Peak	<u>Annual</u>	Peak	Annual	Peak	<u>Annual</u>	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	5 <u>9.8</u>
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

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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	201	3	201	4	201	5	201	6	201	7	201	3
	<u>Annual</u>	<u>Peak</u>	<u>Annual</u>	<u>Peak</u>	<u>Annual</u>	<u>Peak</u>	Annual	<u>Peak</u>	<u>Annual</u>	<u>Peak</u>	Annual	<u>Peak</u>
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

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

FORM-IRP-GAS-3: NUMBER OF CUSTOMERS (YEAR END) REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.

	Historica	al Data	Current Year		Three Year Forecast	
Index Year	-2	-1	0	1	2	3
Actual Year	2013	2014	2015	2016	2017	2018
Firm Sales						
Retail Residential	273,342	279,362	276,091	277,801	279,447	281,097
Retail Commercial	28,845	29,132	28,933	28,969	28,992	29,014
Retail Industrial	285	275	285	285	285	285
Other	0	0	0	0	0	0
Subtotal Sales Service	302,472	308,769	305,309	307,055	308,724	310,396
Electric Power Generation	2	2	2	2	2	2
Transportation Service	119,350	115,653	118,039	118,560	119,061	119,561
CUSTOMER TOTAL	421,824	424,424	423,350	425,617	427,787	429,959
Increase (Decrease)	2,311	2,600	(1,074)	2,267	2,170	2,172
Percent Change (%)	0.500	0.006	-0.003	0.005	0.005	0.005

FORM-IRP-GAS-4A: ANNUAL SUPPLY AND REQUIREMENTS SUMMARY REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC. (volumes in Mmcf)

<u></u>	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:							
Supply Contracts	13,140.0	18,532.0	31,567.0	31,595.0	31,574.0	31,523.0	
Spot Purchases	22,530.0	16,354.0					
Subtotal Gas Supply	35,670.0	34,886.0	31,567.0	31,595.0	31,574.0	31,523.0	
Transportation	43,295.0	47,161.0	43.989.0	44,661.0	44,622.0	44,635.0	
TOTAL GAS SUPPLY	78,965.0	82,047.0	75,556.0	76,256.0	76,196.0	76,158.0	
Requirements:							
Firm Requirements	35,670.0	34,886.0	31,567.0	31,595.0	31,574.0	31.523.0	
Interruptible Requirements	0.0	0.0	0.0	0.0	0.0	0.0	
Subtotal Firm & Interruptible	35,670.0	34,886.0	31,567.0	31,595.0	31,574.0	31.523.0	
Transportation	43,295.0	47,161.0	43,989.0	44,661.0	44,622.0	44.635.0	
Load Reductions							
TOTAL GAS REQUIREMENTS	78,965.0	82,047.0	75,556.0	76,256.0	76,196.0	76,158.0	
Surplus (Deficiency)	0.0	0.0	0.0	0.0	0.0	0.0	

FORM-IRP-GAS-4B PEAK DAY SUPPLY AND REQUIREMENTS SUMMARY REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC. (volumes in Mmcf)

	Historic	al Data	Current Year		Three Year Forecast	
Index Year	-2	-1	0	1	2	3
Actual Year	2013	2014	2015	2016	2017	2018
Gas Supply:						
Supply Contracts	327.7	389.2	437.1	448.0	456.0	463.6
Spot Purchases	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Gas Supply	327.7	389.2	437.1	448.0	456.0	463.6
Transportation	260.8	300.5	310.4	311.5	311.8	311.6
TOTAL GAS SUPPLY	588.5	689.7	747.5	759.5	767.8	775.2
Requirements:		· · ·				
Firm Requirements	327.7	389.2	437.1	448.0	456.0	463.6
Interruptible Requirements	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Firm & Interruptible	327.7	389.2	437.1	448.0	456.0	463.6
Transportation	260.8	300.5	310.4	311.5	311.8	311.6
Load Reductions	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL GAS REQUIREMENTS	588.5	689.7	747.5	759.5	767.8	775.2
Surplus (Deficiency)	0.0	0.0	0.0	0.0	0.0	0.0

FORM-IRP-GAS-5 PROGRAM DESCRIPTION

<u>Company:</u>	Columbia Gas of Pennsylvania, Inc.			
Program:	WarmWise Low Income Usage Reduction Program (WWLIURP)			
	Existing [X]	Proposed []		
Contact Person:	Deborah Davis 724-416-6316			
<u>Obiective:</u>	To reduce the uncollectible accounts and the collection and termination expenses by enabling low-income customers to reduce their energy usage.			

Details of Activity and Implementation Schedule:

Eligible customers are targeted for involvement in the program. For each participating household, Columbia will perform a detailed energy survey, an in-the-home customer education session, and comprehensive weatherization treatments (e.g., insulation and air leakage measures).

Actual and/or Anticipated Results:

	Peak Load		Energy Saving	S	
<u>Year</u>	Reduction <u>Mcf</u>	Electric <u>Mwh</u>	Gas <u>Mcf</u>	Oil <u>Gallons</u>	Other <u>Results</u>
2014(1)	179	0	18,087	0	518 Homes Weatherized
2015 ⁽²⁾	210	0	21,239	0	608 Homes Projected

Monetary and Personnel Resources:

		Categorized Program Expenses				
<u>Year</u>	Personnel <u>Est. Hrs. ⁽³⁾</u>	Outside Services	<u>Admin</u> .	Total		
2014(1)	16,576	\$3,936,612.19	\$329,396	\$4,266,008.19		
2015 ⁽²⁾	19,456	\$4,323,968	\$680,000	\$5,003,968		

(1) Peak and energy savings are calculated based upon the weather efficiency measures taken at the weatherized homes.

(2) Budgeted

(3) Personnel hours were estimated by multiplying the number of homes by 32, the average number of hours spent per house.

FORM-IRP-GAS-5 PROGRAM DESCRIPTION

<u>Company:</u>	Columbia Gas of Pennsylvania, Inc.			
Program:	Emergency Repair Fund Program			
	Existing [X]	Proposed []		
Contact Person:	Deborah Davis 724-416-6316			
<u>Objective:</u>	To reduce the energy burden of low-income customers by providing a furnace repair and replacement program.			

Details of Activity and Implementation Schedule:

This fund is utilized to assist low-income property owners to maintain gas service and reduce usage due to inefficient equipment.

Actual and/or Anticipated Results:

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	Peak Load	Er	nergy Saving	gs ⁽³⁾	
Year	Reduction ⁽³⁾ <u>Mcf</u>	Electric <u>Mwh</u>	Gas <u>Mcf</u>	Oil <u>Gallons</u>	Other <u>Results</u>
2014 ⁽¹⁾					277 Services Provided
2015 ⁽²⁾					275 Services Projected

Monetary and Personnel Resources:

		Categorized Program Expenses				
<u>Year</u>	Personnel <u>Est. Hrs.</u>	Outside <u>Services</u>	Admin	Total		
2014 ⁽¹⁾	1108	\$453,614	\$50,000	\$503,614		
2015 ⁽²⁾	1100	\$450,000	\$50,000	\$500,000		

(1) Actual

(2) Budgeted(3) No savings estimates have been developed.
<u>Company:</u>	Columbia Gas of Pennsylvania, Inc.					
<u>Program:</u>	Customer Assistance	Customer Assistance Program				
	Existing [X]	Proposed []				
Contact Person:	Deborah Davis 724-416-6316					
<u>Objective:</u>	To reduce the growth in and termination expense providing low-income cu conservation education.	uncollectible account balances and the collection es associated with accounts in arrears by ustomers with affordable payment plans and				

Details of Activity and Implementation Schedule:

Eligible customers are those at or below 150% of poverty (income of \$35,325 for a family of four); a failed budget plus customer; and payment troubled. For each participant, an affordable payment will be established based on the base budget, household size and household income.

Actual and/or Anticipated Results:

	Peak Load	Er	nergy Saving	gs ⁽³⁾	
<u>Year</u>	Reduction ⁽³⁾ <u>Mcf</u>	Electric <u>Mwh</u>	Gas <u>Mcf</u>	Oil <u>Gallons</u>	Other <u>Results</u>
2014(1)					26,633 Customers
2015 ⁽²⁾					27,000 Customers

Monetary and Personnel Resources:

Year	Personnel Est. Hrs.	Outside Services	Admin.	Shortfall ⁽⁴⁾	Pre-Program Arrearages ⁽⁵⁾	Total
2014 ⁽¹⁾	N/A	\$509,815	\$568,049	\$16,298,248	\$861,295	\$18,237,407
2015 ⁽²⁾	N/A	\$520,000	\$570,000	\$11,800,000	\$550,000	\$13,440,000

(1) Actuals reflect results at December 31, 2014.

- (2) Budgeted
- (3) No savings estimates have been developed.
- (4) "Shortfall" is the difference between the CAP customers' discounted bills and what the bills would have been if they were billed under standard residential rates. This amount is being recovered under Columbia's Rider CAP.
- (5) Pre-program arrearages are the amounts written off upon the customer's enrollment in CAP.

<u>Company:</u>	Columbia Gas of Pennsylvania, Inc.			
Program:	WarmWise Audits and Rebates (WWA&R)			
	Existing [x]	Proposed []		
Contact Person:	Patty Terpin 724-416-6344			
<u>Objective:</u>	To provide home energy financial incentives for c consumption reduction p	y-audits and an energy efficiency plan with ustomer who may not qualify for other programs.		

Details of Activity and Implementation Schedule:

Income eligible customers are targeted for involvement in the program. Columbia will perform a BPI audit, an in-the-home customer education session, and financial incentives for the installation of recommended measures.

Actual and/or Anticipated Results:

	Peak Load		Energy Saving	gs	
Year	Reduction ⁽¹⁾ <u>Mcf</u>	Electric <u>Mwh</u>	Gas <u>MCF⁽²⁾</u>	Oil <u>Gallons</u>	Other <u>Results</u>
2014	5		507		303 Participants
2015	5		510		330 Participants Projected

Monetary and Personnel Resources:

		Catego	orized Program Exp	benses
<u>Year</u>	Personnel <u>Est. Hrs. ⁽³⁾</u>	Outside Services	Admin.	<u>Total</u>
2014	920	\$367,023.43	\$109,129.98	\$476,153.41
2015	1320	\$400,000	\$100,000	\$500,000

(1) These results are based off 12 months data (2013)

(2) Of the 303 participants, 254 participants who received audits and or rebates in 2013 and that we have twelve months of post consumption data

(3) Personnel hours were estimated by multiplying the individual audits/ measures times the estimated hours to complete each audit and/or install each measure.

(4) Outside services also includes customer rebates for audit recommended installed measures.

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<u>Company:</u> Columbia Gas of Pennsylvania, Inc.

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	Number of Customers	Annual Energy Consumption *	Conservation Impact Reduction or MCF savings		
Energy Users	(Year-end)	<u>(MCF)</u>	Target	Actual	
Residential (Heating)	279,362	24,947,935	3,915	3,347	
Residential (Other)	0	0			
Small Com, & Ind.	29,132	10,011,746			
Large Com, & Ind.	275	231,336			
Street Lighting	0	0			
Railroads	0	0			
Resale	0	0			
Interruptible	0	0			
Interdepartmental	0	0			
Other-Electric Power	2	0			
Other - Transportation	115,653	47,022,563	17,834	15,247	
Other - Misc	<u>0</u>	<u>0</u>			
TOTALS	<u>424,424</u>	<u>82.213.580</u>	<u>21,749</u>	<u>18.594</u>	

* Previous calendar year (2014). ** Approximately 82% of WWLIURP customers are transportation (CHOICE) customers.

FORM-IRP-GAS-7 PROGRAM SUMMARY

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Company: Columbia Gas of Pennsylvania, Inc.

	Peak Load	Energy Use		Categori	Categorized Program Expenses	
Program Name	Reduction	Change	Personnel	Outside	م المع ألم	Tatal
2015 (1)			ESt. Hrs.	Services	<u>Aamin.</u>	<u>10tai</u>
WarmWise Low Income Usage Reduction Program (WWLIURP)	210	21,239	19,456	4,323,968	680,000	5,003,968
Emergency Repair Program	NA	NA	1,100	450,000	50,000	500,000
Customer Assistance Program	NA	NA	NA	520,000	570,000	1,090,000
WarmWise Audits & Rebates (WWA&R)	5	510	1,320	400,000	100,000	500,000
Totals	<u>215</u>	<u>21.749</u>	<u>21.876</u>	<u>\$5.693.968</u>	<u>\$1,400,000</u>	<u>\$7.093.968</u>

(1) Budgeted

COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

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PROGRAM: WarmWise Low Income Usage Reduction Program (WWLIURP)

PARTICIPANT UTILITY AVERAGE AVOIDED ENERGY AVERAGE AVOIDED DEMAND CAPACITY DEMAND DEMAND PARTICIPANT TAX SAVINGS (1) ENERGY COST (2) ENERGY COST (3) SAVINGS (4) SAVINGS COSTS COSTS COSTS CREDITS (E) (ACE) (MCE) (D) (G) (ACD) (MCD) (PC) (TC) \$ PER MCF t YEAR MCF \$ PER MCF MCF MCF \$/MCF \$/MCF \$ \$ 2015 1 21,239 12.50 0.345394737 3.11 210 N/A 93.63 0 N/A 2 2016 21.239 12.73 3.34 0.345394737 210 N/A 93.63 0 N/A 3 2017 21,239 13.02 3.63 0.345394737 210 N/A 93.63 0 N/A 4 2018 21,239 13.14 3.75 0.345394737 210 N/A 93.63 0 N/A 5 2019 21.239 13.84 4.45 0.345394737 210 N/A 95.60 0 N/A 6 2020 21,239 13.93 4.54 0.345394737 210 N/A 97.60 0 N/A 7 2021 21,239 14.03 4.64 0.345394737 210 N/A 99.65 0 N/A 8 2022 21,239 14.12 4.74 0.345394737 210 N/A 101.75 0 N/A 9 2023 21,239 14.22 4.84 0.345394737 210 N/A 103.88 0 N/A 10 2024 21,239 14.33 4.94 0.345394737 210 N/A 106.06 0 N/A 11 2025 21,239 14.43 5.04 0.345394737 210 N/A 108.29 N/A 0 12 21,239 2026 14.54 5.15 0.345394737 210 N/A 110.57 0 N/A 13 2027 21,239 14.64 5.25 0.345394737 210 N/A 112.89 0 N/A 14 2028 21.239 14.75 5.37 0.345394737 210 N/A 115.26 0 N/A 15 2029 21.239 14.87 5.48 0.345394737 210 N/A 117.68 0 N/A 16 2030 21,239 14.98 5.59 0.345394737 210 N/A 120.15 0 N/A 17 2031 21.239 15.10 5.71 0.345394737 210 N/A 122.67 0 N/A 18 2032 21,239 15.22 5.83 0.345394737 210 N/A 125.25 0 N/A 19 2033 21,239 15.34 5.95 0.345394737 210 N/A 127.88 0 N/A 20 2034 21,239 15.47 6.08 0.345394737 210 N/A 130.57 0 N/A 21 2035 21,239 15.59 6.21 0.345394737 210 N/A 133.31 0 N/A 22 2036 21.239 15.72 6.34 0.345394737 210 N/A 136.11 0 N/A 23 2037 21.239 15.86 6.47 0.345394737 210 N/A 138.96 0 N/A 24 2038 21,239 15.99 6.60 0.345394737 210 N/A 141.88 0 N/A 25 2039 21,239 16.13 6.74 0.345394737 210 N/A 144.86 N/A 0

(1) The energy savings (E) include annual savings realized by Choice customers and traditional sales customers.

(2) Average energy cost is based on CPA's residential rate.

(3) Estimates are calculated from the SENDOUT model.

(4) Estimates are calculated from the LOADCALC model.

N/A is not applicable.

PAGE 1 OF 2

COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

PROGRAM: WarmWise Low Income Usage Reduction Program (WWLIURP)

					DISCOUNT RATES		EVETEM BALES	SALES OR		
t	YEAR	INCENTIVE COST (I) \$	COSTS (UC) \$	PARTICIPANT (d) %	NON-PARTICIPANT (1) (d) %	UTILITY (2) (d) %	RATE (3) (e) %	OR DEMAND (4) (S) MCF	DEMAND RATIO (f) %	REDUCTION (UA) \$
1		0	5,003,968	7.63	5.70	7.63	1.4%	31,545,761	0.00143253	N/A
2	2016	0	0	7.63	6.10	7.63	1.8%	31,573,761	0.00143253	N/A
3	2017	0	0	7.63	6.20	7.63	1.9%	31,552,761	0.00143253	N/A
4	2018	0	0	7.63	6 .10	7.63	2.0%	31,501,761	0.00143253	N/A
5	2019	0	0	7.63	6.20	7.63	2.1%	31,460,761	0.00143253	N/A
6	2020	0	0	7.63	6.20	7.63	2.1%	31,414,761	0.00143253	N/A
7	2021	0	0	7.63	6.20	7.63	2.1%	31,319,761	0.00143253	N/A
8	2022	0	0	7.63	6.20	7.63	2.1%	31,188,761	0.00143253	N/A
9	2023	0	0	7.63	6.20	7.63	2.1%	31,042,761	0.00143253	N/A
10	2024	0	0	7.63	6.20	7.63	2.1%	30,918,761	0.00143253	N/A
11	2025	0	0	7.63	6.20	7.63	2.1%	30,863,574	0.00143253	N/A
12	2026	0	0	7.63	6.20	7.63	2.1%	30,808,485	0.00143253	N/A
13	2027	0	0	7.63	6.20	7.63	2.1%	30,753,494	0.00143253	N/A
14	2028	0	0	7.63	6.20	7.63	2.1%	30,698,602	0.00143253	N/A
15	2029	0	0	7.63	6.20	7.63	2.1%	30,643,808	0.00143253	N/A
16	2030	0	0	7.63	6.20	7.63	2.1%	30,589,111	0.00143253	N/A
17	2031	0	0	7.63	6.20	7.63	2.1%	30,534,511	0.00143253	N/A
18	2032	0	0	7.63	6.20	7.63	2.1%	30,480,010	0.00143253	N/A
19	2033	0	0	7.63	6.20	7.63	2.1%	30,425,605	0.00143253	N/A
20	2034	0	ΰ	7.63	6.20	7.63	2.1%	30,371,297	0.00143253	N/A
21	2035	0	0	7.63	6.20	7.63	2.1%	30,317,087	0.00143253	N/A
22	2036	Ð	0	7.63	6.20	7.63	2.1%	30,262,973	0.00143253	N/A
23	2037	0	0	7.63	6.20	7.63	2.1%	30,208,955	0.00143253	N/A
24	2038	0	0	7.63	6.20	7.63	2.1%	30,155,034	0.00143253	N/A
25	2039	0	0	7.63	6.20	7.63	2.1%	30,101,209	0.00143253	N/A

770,733,365

The Non-Participant discount rate is based on the Global Insight forecast for 10-year U.S. Treasury bills.
The Participant and Utility discount rates are Columbia Gas of Pennsylvania's requested return on rate base.
The escalation rate is the GDP price deflator, based on the Global Insight U.S. economic outlook for February 2012.

(4) System Sales do not include transportation volumes.

PAGE 2 OF 2

COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

PROGRAM: WarmWise Audits & Rebates (WWA&R)

PARTICIPANT UTILITY AVERAGE AVOIDED ENERGY AVERAGE DEMAND CAPACITY DEMAND DEMAND PARTICIPANT TAX SAVINGS (1) ENERGY COST (2) ENERGY COST (3) SAVINGS (4) SAVINGS COSTS COSTS COSTS CREDITS (E) (ACE) (MCE) (D) (G) (ACD) (MCD) (PC) (TC) t YEAR MCF S PER MCF **\$ PER MCF** MCF MCF \$/MCF \$/MCF \$ \$ -----2015 1 6.365 12.50 3.11 0.015151515 N/A 5 93.63 0 N/A 2 2016 510 12.73 3.34 0.015151515 5 N/A 93.63 0 N/A З 2017 510 13.02 3.63 0.015151515 5 N/A 93.63 0 N/A 4 2018 510 13.14 3.75 0.015151515 N/A 5 93.63 0 N/A 5 2019 510 13.84 4.45 0.015151515 5 N/A 95.60 0 N/A 2020 6 510 13.93 4.54 0.015151515 5 N/A 97.60 0 N/A 7 2021 510 14.03 4.64 0.015151515 5 N/A 99.65 0 N/A 8 2022 510 14.12 4,74 0.015151515 5 N/A 101.75 0 N/A 2023 9 510 14.22 4.84 0.015151515 5 N/A 103.88 0 N/A 10 2024 510 14.33 4.94 0.015151515 5 N/A 0 106.06 N/A 11 2025 510 14.43 5.04 0.015151515 5 N/A 108.29 0 N/A 12 2026 510 14.54 5.15 0.015151515 5 N/A 110.57 0 N/A 13 2027 510 14.64 5.25 0.015151515 NİA 5 112.89 0 N/A 14 2028 510 14.75 5.37 0.015151515 5 N/A 115.26 0 N/A 15 2029 510 14.87 5.48 0.015151515 5 N/A 117.68 0 N/A 16 2030 510 14.98 5.59 0.015151515 5 N/A 120.15 0 N/A 17 2031 510 15.10 5.71 0.015151515 5 N/A 122.67 0 N/A 18 2032 510 15.22 5.83 0.015151515 N/A 5 125.25 0 N/A 19 2033 510 15.34 5.95 0.015151515 5 N/A 127.88 0 N/A 20 2034 510 15.47 6.08 0.015151515 5 N/A 130.57 0 N/A 21 2035 510 15.59 6.21 0.015151515 5 N/A 133.31 0 N/A 22 2036 510 15.72 6.34 0.015151515 5 N/A 136.11 0 N/A 23 2037 510 15.86 6.47 0.015151515 5 N/A 138.96 0 N/A 24 2038 510 15.99 6.60 0.015151515 5 N/A 0 141.88 N/A 25 2039 510 16.13 6.74 0.015151515 5 N/A 0 144.86 N/A

(1) The energy savings (E) include annual savings realized by Choice customers and traditional sales customers.

(2) Average energy cost is based on CPA's residential rate.

(3) Estimates are calculated from the SENDOUT model.

(4) Estimates are calculated from the LOADCALC model.

N/A is not applicable.

PAGE 1 OF 2

COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

PROGRAM: WarmWise Audits & Rebates (WWA&R)

PAGE 2 ()F 2
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		INCENTIVE		E	DISCOUNT RATES		ESCALATION	SYSTEM SALES	SALES OR		
t	YEAR	COST (I) \$	COSTS (UC) \$	PARTICIPANT (d) %	NON-PARTICIPANT (1) (d) %	UTILITY (2) (d) %	RATE (3) (e) %	OR DEMAND (4) (S) MCF	DEMAND RATIO (f) %	REDUCTION (UA) \$	
1	2015	0	500,000	7.63	5.70	7.63	1.4%	31,566,490	0.000777524	N/A	
2	2016	0	0	7.63	6.10	7.63	1.8%	31,594,490	0.000777524	N/A	
3	2017	0	0	7.63	6.20	7.63	1.9%	31,573,490	0.000777524	N/A	
4	2018	0	0	7.63	6.10	. 7.63	2.0%	31,522,490	0.000777524	N/A	
5	2019	0	0	7.63	6.20	7.63	2.1%	31,481,490	0.000777524	N/A	
6	2020	0	0	7.63	6.20	7.63	2.1%	31,435,490	0.000777524	N/A	
7	2021	0	0	7.63	6.20	7.63	2.1%	31,340,490	0.000777524	N/A	
8	2022	0	0	7.63	6.20	7.63	2.1%	31,209,490	0.000777524	N/A	
9	2023	0	0	7.63	6.20	7.63	2.1%	31,063,490	0.000777524	N/A	
10	2024	0	0	7.63	6.20	7.63	2.1%	30,939,490	0.000777524	N/A	
11	2025	0	0	7.63	6.20	7.63	2.1%	30,884,303	0.000777524	N/A	
12	2026	0	0	7.63	6.20	7.63	2.1%	30,829,214	0.000777524	N/A	
13	2027	0	0	7.63	6.20	7.63	2.1%	30,774,223	0.000777524	N/A	
14	2028	0	0	7.63	6.20	7.63	2.1%	30,719,331	0.000777524	N/A	
15	2029	0	0	7.63	6.20	7.63	2.1%	30,664,537	0.000777524	N/A	
16	2030	0	0	7.63	6.20	7.63	2.1%	30,609,840	0.000777524	N/A	
17	2031	0	0	7.63	6.20	7.63	2.1%	30,555,240	0.000777524	N/A	
18	2032	0	0	7.63	6.20	7.63	2.1%	30,500,739	0.000777524	N/A	
19	2033	0	0	7.63	6.20	7.63	2.1%	30,446,334	0.000777524	N/A	
20	2034	0	0	7.63	6.20	7.63	2.1%	30,392,026	0.000777524	N/A	
21	2035	0	0	7.63	6.20	7.63	2.1%	30,337,816	0.000777524	N/A	
22	2036	0	0	7.63	6.20	7.63	2.1%	30,283,702	0.000777524	N/A	
23	2037	0	0	7.63	6.20	7.63	2.1%	30,229,684	0.000777524	N/A	
24	2038	0	0	7.63	6.20	7.63	2,1%	30,175,763	0.000777524	N/A	
25	2039	0	0	7.63	6.20	7.63	2.1%	30,121,938	0.000777524	N/A	

771,251,590

The Non-Participant discount rate is based on the Global Insight forecast for 10-year U.S. Treasury bills.
The Participant and Utility discount rates are Columbia Gas of Pennsylvania's requested return on rate base.
The escalation rate is the GDP price deflator, based on the Global Insight U.S. economic outlook for February 2012.
System Sales do not include transportation volumes.

COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS RESULTS

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PROGRAM: WarmWise Low Income Usage Reduction Program (WWLIURP)

PERIOD OF ANALYSIS BEGINNING ENDING YEAR YEAR		TOTAL UTILITY BENEEITS	TOTAL UTILITY COSTS	REVENUE REDUCTION	PARTICIPANT REVENUE RECUNREMENT	TOTAL PARTICIPANT BENEFITS	TOTAL PARTICIPANT COSTS
		(Bu) \$	(Cu) \$	(Cu) (Cr) \$ \$		(Bp) \$	(Cp) \$
2015	2039	1,343,525	4,649,232	3,294,328	9,455	3,294,328	0

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DISCOUNTED		NET PRESENT VALUE			BENEFIT-COST RATIO		RATE IMPACT
PAYBACK PERIOD YRS	PARTICIPANT (NPVp) \$	NON-PART (NPVnp) \$	UTILITY (NPVu) \$	PARTICIPANT (BCRp)	NON-PART (BCRnp)	UTILITY (BCRu) -	(RIMnp) \$ PER MCF
2	5 3,294,328	(6,590,580)	(3,305,707)	Infinity	0.1691	0.2890	0.0086

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COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS RESULTS

PROGRAM: WarmWise Audits & Rebates (WWA&R)

PERIOD OF A	NALYSIS	TOTAL UTILITY BENEFITS	TOTAL UTILITY COSTS	REVENUE REDUCTION COST	PARTICIPANT REVENUE REQUIREMENT	TOTAL PARTICIPANT BENEFITS	TOTAL PARTICIPANT COSTS
BEGINNING YEAR	ENDING YEAR	(Bu) \$	(Cu) \$	(Cr) \$	(Rp) \$	(Bp) \$	(Cp) _ \$
2015	2039	32,211	464,554	79,105	398	79,105	0

					RATE IMPACT		
PAYBACK PERIOD YRS	PARTICIPANT (NPVp) \$	NON-PART (NPVnp) \$	UTILITY (NPVu) \$	PARTICIPANT (BCRp)	NON-PART (BCRnp) -	UTILITY (BCRu) •	(RIMnp) \$ PER MCF
25	5 79,105	(511,050)	(432,343)	Infinity	0.0592	0.0693	0.0007

ANNUAL RESOURCE PLANNING REPORT



Columbia Gas of Pennsylvania, Inc.

2015 Forms 3-9

RECEIVED 2015 HAY 29 AH 10: 48 SECRETARY'S BUREAU

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

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

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ANNUAL RESOURCE PLANNING REPORT Forms 3-9

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Filed: June 2015

Information Submitted in Compliance with and Pursuant to Title 52 Pennsylvania Code Sections 59.81-59.84

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PA.P.UCOLUMBIA GAS OF PENNSYLVANIA, INC. SECRETARY'S DUREAU

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9	59.81	2015 Annual Resource Planning Summary Report

Columbia Gas of Pennsylvania, Inc. Exhibit 1 Sheet 1 of 2

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 <u>unbound</u> for ease of duplication.

One courtesy copy should also be submitted to:

Pennsylvania Public Utility Commission Bureau of Technical Utility Services 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 Harrisburgh, PA 17101-3265



Columbia Gas of Pennsylvania, Inc.

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 documents components.

Information contained in annual resource planning reports must be utilityspecific. 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.

<u>Response:</u> An original, seven (7) copies, and one unbound copy of Forms 3 through 9 are being submitted along with a general discussion of the methodologies, data sources, and assumptions.

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 specific questions concerning each section:

Form 3 - William J. Gresham - Manager of Forecasting (614) 460-6215

Form 4 – Henry A. Catron - Director, Supply and Capacity Management (614) 460-6222

Forms 5-9 – Patricia M. Terpin - Manager of Customer Programs (724) 416-6344

Columbia Gas of Pennsylvania, Inc. Exhibit 2 Sheet 1 of 1

Section 59.81: Form IRP-Gas 3 - Historical, Current, and Forecast Number of Customers

Provide the number of year-end customers displayed by component parts.

<u>Response:</u> Please see the attached form.

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FORM-IRP-GAS-3: NUMBER OF CUSTOMERS (YEAR END) REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC.

	Historical Data		Current Year	Three Year Forecast		
Index Year	-2	-1	0	1	2	3
Actual Year	2013	2014	2015	2016	2017	2018
Firm Sales						
Retail Residential	273,342	279,362	276,091	277,801	279,447	281,097
Retail Commercial	28,845	29,132	28,933	28,969	28,992	29,014
Retail Industrial	285	275	285	285	285	285
Other	o	0	. 0	0	0	0
Subtotal Sales Service	302,472	308,769	305,309	307.055	308,724	310,396
Electric Power Generation	2	2	2	2	2	2
Transportation Service	119,350	115,653	118,039	118,560	119,061	119,561
CUSTOMER TOTAL	421,824	424,424	423,350	425,617	427,787	429,959
Increase (Decrease)	2,311	2,600	(1,074)	2,267	2,170	2,172
Percent Change (%)	0.500	0.006	-0.003	0.005	0.005	0.005

Columbia Gas of Pennsylvania, Inc. Exhibit 3 Sheet 1 of 1

Section 59.81 Form IRP-Gas 4A and 4B - Annual and Peak Day Energy Supply and Demand Requirements

For gas supply, total "Supply Contracts" and "Spot Purchases" and subtract "Deductions" to obtain "Net Gas Supply."

For requirements, total "Firm Requirement" and "Interruptible Requirements" and subtract "Load Deductions" to obtain "Net Gas Requirements."

Subtract "Net Gas Requirements" from "Net Gas Supply" to obtain "Surplus or Deficiency."

<u>Response:</u> Please see attached forms.

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FORM-IRP-GAS-4A: ANNUAL SUPPLY AND REQUIREMENTS SUMMARY REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC. (volumes in Mmcf)

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	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:						
Supply Contracts	13,140.0 22,530.0	18,532.0 16,354.0	31,567.0	31,595.0	31,574.0	31,523.0
Subtotal Gas Supply	35,670.0	34,886.0	31,567.0	31,595.0	31,574.0	31,523.0
Transportation	43.295.0	47,161.0	43,989.0	. 44,661.0	44.622.0	44,635.0
TOTAL GAS SUPPLY	78,965.0	82,047.0	75,556.0	76,256.0	76,196.0	76,158.0
Requirements:			·			
Firm Requirements	35,670.0	34,886.0	31,567.0	31,595.0	31,574.0	31,523.0
Interruptible Requirements	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Firm & Interruptible	35,670.0	34,886.0	31,567.0	31,595.0	31,574.0	31,523.0
Transportation	43,295.0	47,161.0	43,989.0	44,661.0	44,622.0	44,635.0
Load Reductions						
TOTAL GAS REQUIREMENTS	78,965.0	82,047.0	75,556.0	76,256.0	76,196.0	76,158.0
Surplus (Deficiency)	0.0	0.0	0.0	0.0	0.0	0.0

FORM-IRP-GAS-4B PEAK DAY SUPPLY AND REQUIREMENTS SUMMARY REPORTING UTILITY: COLUMBIA GAS OF PENNSYLVANIA, INC. (volumes in Mmcf)

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	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:						
Suratu Contracto	207.7		107.1			
Supply Contracts	327.7	389.2	437.1	448.0	456.0	463.6
Spot Purchases	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Gas Supply	327.7	389.2	437.1	· 448.0	456.0	463.6
Transportation	260.8	300.5	310.4	311.5	311.8	311.6
TOTAL GAS SUPPLY	588.5	689.7	747.5	759.5	767.8	775.2
Requirements:						
Firm Requirements	327.7	389.2	437.1	448.0	456.0	463.6
Interruptible Requirements	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal Firm & Interruptible	327.7	389.2	437.1	448.0	456.0	463.6
Transportation	260.8	300.5	310.4	311.5	311.8	311.6
Load Reductions	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL GAS REQUIREMENTS	588.5	689.7	747.5	759.5	767.8	775.2
Surplus (Deficiency)	0.0	0.0	0.0	0.0	0.0	0.0

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Columbia Gas of Pennsylvania, Inc. Exhibit 4 Sheet 1 of 1

Section 59.82 Energy Conservation Report

A. The ARPR must include a detailed description of all conservation and load management programs implemented by the utility during the past calendar year and all programs proposed to be implemented this (current) year. Complete Forms IRP-Gas-5 through IRP-Gas-9 as follows:

Form IRP-Gas 5 - Program Description

- 1. One Form IRP-GAS-5 must be provided for each program.
- 2. Provide a descriptive name of the program, the participating customer class and the program status (existing or proposed).
- 3. Provide the name of an appropriate contact person and telephone number.
- 4. Succinctly describe the objective(s) of the program.
- 5. Provide details of program activities and a schedule for implementation.
- 6. Provide actual or anticipated results in terms of peak day reduction, load shifted, energy saved or other results, where applicable.
- 7. Provide a breakdown of all monetary and personnel resources. Additional program expense categories may be used.

<u>Response:</u> Please see the following forms.

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<u>Company:</u>	Columbia Gas of Pennsylvania, Inc.				
<u>Program:</u>	WarmWise Low Income Usage Reduction Program (WWLIURP)				
	Existing [X]	Proposed []			
Contact Person:	Deborah Davis 724-416-6316				
<u>Objective:</u>	To reduce the uncollection expenses by enabling locusage.	ible accounts and the collection and termination ow-income customers to reduce their energy			

Details of Activity and Implementation Schedule:

Eligible customers are targeted for involvement in the program. For each participating household, Columbia will perform a detailed energy survey, an in-the-home customer education session, and comprehensive weatherization treatments (e.g., insulation and air leakage measures).

Actual and/or Anticipated Results:

<u>Year</u>	Peak Load Reduction <u>Mcf</u>	Electric <u>Mwh</u>	Energy Savings Gas <u>Mcf</u>	s Oil <u>Gallons</u>	Other <u>Results</u>
2014 ^(†)	179	0	18,087	0	518 Homes Weatherized
2015 ⁽²⁾	210	0	21,239	0	608 Homes Projected

Monetary and Personnel Resources:

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	_	Catego	rized Program E	kpenses		
<u>Year</u>	Personnel <u>Est. Hrs. ⁽³⁾</u>	Outside <u>Services</u>	<u>Admin</u> .	Total		
2014 ⁽¹⁾	16,576	\$3,936,612.19	\$329,396	\$4,266,008.19	201 201	1
2015 ⁽²⁾	19,456	\$4,323,968	\$680,000	\$5,003,968	5 HAY 2 CRETAI	れ こ の
(1) Peak and at the we(2) Budgetee(3) Personne	d energy savings a eatherized homes. d el hours were estin	re calculated based unated by multiplying the	upon the weather	efficiency measure nes by 32, the aver	Ciss Burge	GENE

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(3) Personnel hours were estimated by multiplying the number of homes by 32, the average number of hours spent per house.

Company:	Columbia Gas of Pennsylvania, Inc.				
Program:	Emergency Repair Fund Program				
	Existing [X]	Proposed []			
Contact Person:	Deborah Davis 724-416-6316				
<u>Objective:</u>	To reduce the energy burden of low-income customers by providing a furnace repair and replacement program.				

Details of Activity and Implementation Schedule:

This fund is utilized to assist low-income property owners to maintain gas service and reduce usage due to inefficient equipment.

Actual and/or Anticipated Results:

	Peak Load	Er	nergy Saving	gs ⁽³⁾	
Year	Reduction ⁽³⁾ Mcf	Electric Mwh	Gas	Oil Gallons	Other Results
<u></u>		<u></u>			Itobuto
2014(1)					277 Services Provided
2015 ⁽²⁾					275 Services Projected

Monetary and Personnel Resources:

-		Categorized Program Expenses					
Year	Personnel <u>Est. Hrs.</u>	Outside <u>Services</u>	Admin	Total			
2014 ⁽¹⁾	1108	\$453,614	\$50,000	\$503,614			
2015 ⁽²⁾	1100	\$450,000	\$50,000	\$500,000			



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Company:	Columbia Gas of Pennsylvania, Inc.			
Program:	Customer Assistance Program			
	Existing [X]	Proposed []		
Contact Person:	Deborah Davis 724-416-6316			
<u>Objective:</u>	To reduce the growth in and termination expense providing low-income cu conservation education.	uncollectible account balances and the collection es associated with accounts in arrears by ustomers with affordable payment plans and		

Details of Activity and Implementation Schedule:

Eligible customers are those at or below 150% of poverty (income of \$35,325 for a family of four); a failed budget plus customer; and payment troubled. For each participant, an affordable payment will be established based on the base budget, household size and household income.

Actual and/or Anticipated Results:

	Peak Load	Er	hergy Saving	gs ⁽³⁾			
<u>Year</u>	Reduction ⁽³⁾ <u>Mcf</u>	Electric <u>Mwh</u>	Gas <u>Mcf</u>	Oil <u>Gallons</u>	Other <u>Results</u>		
2014 ⁽¹⁾					26,633 Customers		
2015 ⁽²⁾					27,000 Customers		

Monetary and Personnel Resources:

Year	Personnel Est. Hrs.	Outside Services	Admin.	Shortfall ⁽⁴⁾	Pre-Program Arrearages ⁽⁵⁾	Total
2014 ^{(1).}	N/A	\$509,815	\$568,049	\$16,298,248	\$861,295	\$18,237,407
2015 ⁽²⁾	N/A	\$520,000	\$570,000	\$11,800,000	\$550,000	\$13,440,000

- (1) Actuals reflect results at December 31, 2014.
- (2) Budgeted
- (3) No savings estimates have been developed.

- (4) "Shortfall" is the difference between the CAP customers' discounted bills and what the bills would have been if they were billed under standard residential rates. This amount is being recovered under Columbia's Rider CAP.
- (5) Pre-program arrearages are the amounts written off upon the customer's enrollment in CAP.

<u>Company:</u>	Columbia Gas of Pennsylvania, Inc.			
Program:	WarmWise Audits and	Rebates (WWA&R)		
	Existing [x]	Proposed []		
Contact Person:	Patty Terpin 724-416-6344			
<u>Objective:</u> To provide home energy-audits and an energy efficiency p financial incentives for customer who may not qualify for o consumption reduction programs.				

Details of Activity and Implementation Schedule:

Income eligible customers are targeted for involvement in the program. Columbia will perform a BPI audit, an in-the-home customer education session, and financial incentives for the installation of recommended measures.

Actual and/or Anticipated Results:

	Peak Load		Energy Savings				
<u>Year</u>	Reduction ⁽¹⁾ <u>Mcf</u>	Electric <u>Mwh</u>	Gas MCF ⁽²⁾	Oil <u>Gallons</u>	Other <u>Results</u>		
2014	5		507		303 Participants		
2015	5		510		330 Participants Projected		

Monetary and Personnel Resources:

		Categorized Program Expenses						
<u>Year</u>	Personnel <u>Est. Hrs. ⁽³⁾</u>	Outside <u>Services</u>	Admin.	<u>Total</u>				
2014	920	\$367,023.43	\$109,129.98	\$476,153.41				
2015	1320	\$400,000	\$100,000	\$500,000				

(1) These results are based off 12 months data (2013)

(2) Of the 303 participants, 254 participants who received audits and or rebates in 2013 and that we have twelve months of post consumption data

(3) Personnel hours were estimated by multiplying the individual audits/ measures times the estimated hours to complete each audit and/or install each measure.

(4) Outside services also includes customer rebates for audit recommended installed measures.

Columbia Gas of Pennsylvania, Inc. Exhibit 5 Sheet 1 of 1

Section 59.82 Form-IRP-Gas-6 - Energy Users

The utility shall provide the number of year-end users displayed by component parts.

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<u>Response:</u> Please see the attached form.

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FORM-IRP-GAS-6 ENERGY USERS

Company: Columbia Gas of Pennsylvania, Inc.

	Number of Customers	Annual Energy Consumption *	Conservation Impact Reduction or MCF savings		
Energy Users	(Year-end)	<u>(MCF)</u>	Target	Actual	
Residential (Heating)	279,362	24,947,935	3,915	3,347	
Residential (Other)	0	0			
Smali Com. & Ind.	29,132	10,011,746			
Large Com. & Ind.	275	231,336			
Street Lighting	0	0			
Railroads	0	0			
Resale	0	0			
Interruptible	0	0			
Interdepartmental	0	0			
Other-Electric Power	2	0			
Other - Transportation	115,653	47,022,563	17,834	15,247	
Other - Misc	<u>0</u>	<u>0</u>			
TOTALS	<u>424,424</u>	<u>82,213,580</u>	<u>21.749</u>	<u>18,594</u>	

* Previous calendar year (2014). ** Approximately 82% of WWLIURP customers are transportation (CHOICE) customers.

Columbia Gas of Pennsylvania, Inc. Exhibit 6 Sheet 1 of 1

Section 59.82 Form-IRP-Gas-7 - Conservation and Load Management Program Summary

- 1. Use this form to provide a summary of the information provided in Form IRP-Gas-5.
- 2. Provide annual totals for program for results and monetary and personnel resources.
- 3. For programs with annual expenditures of more than \$100,000 or more than 0.1% of total annual revenue, a cost benefit analysis must be performed. The current methodology, prescribed by the Bureau of Conservation, Economics and Energy Planning pursuant to Section 59.82(E), is essentially the same as that contained in the former Section 69.122, with minor modifications. This methodology shall be used until further notice. The following discussion provides instructions for completing Form IRP-GAS-8 (analysis inputs) and Form IRP-GAS-9 (analysis results), including the necessary definitions and equations.

Response:

Please see the following form.

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FORM-IRP-GAS-7 PROGRAM SUMMARY

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Company: Columbia Gas of Pennsylvania, Inc.

	Peak Load	Energy Use		Categorized Program Expenses		
Program Name <u>2015 (1)</u>	Reduction (MCF)	Change (MCF)	Personnel Est. Hrs.	Outside <u>Services</u>	<u>Admin.</u>	Total
WarmWise Low Income Usage Reduction Program (WWLIURP)	210	21,239	19,456	4,323,968	680,000	5,003,968
Emergency Repair Program	NA	NA	1,100	450,000	50,000	500,000
Customer Assistance Program	NA	NA	NA	520,000	570,000	1,090,000
WarmWise Audits & Rebates (WWA&R)	5	510	1,320	400,000	100,000	500,000
Totals	<u>215</u>	<u>21.749</u>	<u>21.876</u>	<u>\$5,693,968</u>	<u>\$1.400.000</u>	<u>\$7.093.968</u>

(1) Budgeted

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2015 HAY 29 AM 10: 49 Columbia Gas of Pennsylvania, Inc. PA.P.U.C. Exhibit 7 SECRETARY'S BUREAU Sheet 1 of 2

Section 59.82 Form IRP-GAS-8 - Conservation and Load Management Program Cost Benefit Analysis Inputs

- 1. Variable E represents the program participants' annual energy savings occurring in year t, in MCF.
- 2. Variable **CE** represents the program participants' cumulative energy savings, in MCF.
- 3. Variable **ES** represents the amount of energy use that has been shifted from peak to off-peak in MCF.
- 4. Variable **D** represents the program participants' demand reduction occurring in year **t**, in MCF.
- 5. Variable **G** represents the equivalent supply reduction, including all identifiable and quantifiable reductions in the utility's demand requirement, occurring in year **t**, in MCF.
- 6. Variable **PC** represents the direct cost to the participants of the action or measure, including the initial capital cost, sales tax, operation and maintenance costs, and removal costs less salvage.
- 7. Variable I represents the cost of any monetary incentive paid directly to the participants to offset explicitly quantified participant costs.
- 8. Variable UC represents all other utility program costs, excluding direct incentives.
- 9. Variable d represents the appropriate discount rate.
- 10. Variable ACE represents the average cost of energy for participants in year t. The average cost should reflect actual rates currently in effect, including seasonal-differentiated rates where appropriate, and reasonable escalation factors.
- 11. Variable **ACD** represents the average cost of demand avoided by participants in year **t**. This variable should be developed by using

Columbia Gas of Pennsylvania, Inc. Exhibit 7 Sheet 2 of 2

actual rates currently in effect and escalating those costs into the future. Seasonal-differentiated rates should be used, if appropriate.

- 12. Variable CE represents the marginal cost of energy avoided by the utility in year t. Transmission and distribution losses should be reflected in either MCE or E. If costs are substantially affected by season, appropriate time periods should be used to more closely reflect marginal energy costs.
- 13. Variable MCD represents the marginal cost of supply avoided by the utility in year t. If costs are substantially affected by season, appropriate time periods should be used to more closely reflect marginal capacity costs.
- 14. Variable S represents system sales, in thousand cubic feet reflecting the effects of the program over the period of analysis.
- 15. The period of analysis, N, may be less than 30 years, but should be of sufficient length to reflect all program costs and benefits.

<u>Response:</u> Please see the following form.

COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

PROGRAM: WarmWise Low Income Usage Reduction Program (WWLIURP)

t	YEAR	ENERGY SAVINGS (1) (E) MCF	AVERAGE ENERGY COST (2) (ACE) \$ PER MCF	AVOIDED ENERGY COST (3) (MCE) \$ PER MCF	PARTICIPANT DEMAND SAVINGS (4) (D) MCF	UTILITY CAPACITY SAVINGS (G) MCF	AVERAGE DEMAND COSTS (ACD) \$/MCF	AVOIDED DEMAND COSTS (MCD) \$/MCF	PARTICIPANT COSTS (PC) \$	TAX CREDITS (TC) \$
1	2015	21,239	12.50	3.11	0.345394737	210	N/A	93.63		N/A
2	2016	21,239	12.73	3.34	0.345394737	210	N/A	93.63	0	N/A
Э	2017	21,239	13.02	3.63	0.345394737	210	N/A	93.63	0	N/A
4	2018	21,239	13.14	3.75	0.345394737	210	N/A	93.63	0	N/A
5	2019	21,239	13.84	4.45	0.345394737	210	N/A	95.60	0	N/A
6	2020	21,239	13.93	4.54	0.345394737	210	N/A	97.60	0	N/A
- 7	2021	21,239	14.03	4.64	0.345394737	210	N/A	99.65	0	N/A
8	2022	21,239	14.12	4.74	0.345394737	210	N/A	101.75	0	N/A
9	2023	21,239	14.22	4.84	0.345394737	210	N/A	103.88	0	N/A
10	2024	21,239	14.33	4.94	0.345394737	210	N/A	106.06	0	N/A
11	2025	21,239	14.43	5.04	0.345394737	210	N/A	108.29	0	N/A
12	2026	21,239	14.54	5.15	0.345394737	210	N/A	110.57	0	N/A
13	2027	21,239	14.64	5.25	0.345394737	210	N/A	112.89	0	N/A
14	2028	21,239	14.75	5.37	0.345394737	210	N/A	115.26	0	N/A
15	2029	21,239	14.87	5.48	0.345394737	210	N/A	117.68	0	N/A
16	2030	21,239	14.98	5.59	0.345394737	210	N/A	120.15	0	N/A
17	2031	21,239	15.10	5.71	0.345394737	210	N/A	122.67	0	N/A
18	2032	21,239	15.22	5.83	0.345394737	210	N/A	125.25	0	N/A
19	2033	21,239	15.34	5.95	0.345394737	210	N/A	127.88	0	N/A
20	2034	21,239	15.47	6.08	0.345394737	210	N/A	130.57	0	N/A
21	2035	21,239	15.59	6.21	0.345394737	210	,N/A	133.31	0	N/A
22	2036	21,239	15.72	6.34	0.345394737	210	N/A	136.11	0	N/A
23	2037	21,239	15.86	6.47	0.345394737	210	N/A	138.96	0	N/A
24	2038	21,239	15.99	6.60	0.345394737	210	N/A	141.88	0	N/A
25	2039	21,239	16.13	6.74	0.345394737	210	N/A	144.86	0	N/A

The energy savings (E) include annual savings realized by Choice customers and traditional sales customers.
Average energy cost is based on CPA's residential rate.
Estimates are calculated from the SENDOUT model.
Estimates are calculated from the LOADCALC model.
N/A is not applicable.

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COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

PROGRAM: WarmWise Low Income Usage Reduction Program (WWLIURP)

				I	DISCOUNT RATES					UNCOLLECTIBLE
t	YEAR	INCENTIVE COST (I) \$	UTILITY COSTS (UC) \$	PARTICIPANT (d) %	NON-PARTICIPANT (1) (d) %	UTILITY (2) (d) %	ESCALATION RATE (3) (e) %	SYSTEM SALES OR DEMAND (4) (S) MCF	SALES OR DEMAND RATIO (f) %	ACCOUNT REDUCTION (UA) \$
1		0	5,003,968	7.63	5.70	7.63	1.4%	31,545,761	0.00143253	N/A
2	2016	0	0	7.63	6.10	7.63	1.8%	31,573,761	0.00143253	N/A
3	2017	0	0	7.63	6.20	7.63	1.9%	31,552,761	0.00143253	N/A
4	2018	0	0	7.63	6.10	7.63	2.0%	31,501,761	0.00143253	N/A
5	2019	0	0	7.63	6.20	7.63	2.1%	31,460,761	0.00143253	N/A
6	2020	0	C	7.63	6.20	7.63	2.1%	31,414,761	0.00143253	N/A
7	2021	0	0	7.63	6.20	7.63	2.1%	31,319,761	0.00143253	N/A
8	2022	0	0	7.63	6.20	7.63	2.1%	31,188,761	0.00143253	N/A
9	2023	0	0	7.63	6.20	7.63	2.1%	31,042,761	0.00143253	N/A
10	2024	0	0	7.63	6.20	7.63	2.1%	30,918,761	0.00143253	N/A
11	2025	0	0	7.63	6.20	7.63	2.1%	30,863,574	0.00143253	N/A
12	2026	0	0	7.63	6.20	7.63	2.1%	30,808,485	0.00143253	N/A
13	2027	0	0	7.63	6.20	7.63	2.1%	30.753,494	0.00143253	N/A
14	2028	0	0	7.63	6.20	7.63	2.1%	30,698,602	0.00143253	N/A
15	2029	0	0	7.63	6.20	7.63	2.1%	30,643,808	0.00143253	N/A
16	2030	0	0	7.63	6.20	7.63	2.1%	30,589,111	0.00143253	N/A
17	2031	0	0	7.63	6.20	7.63	2.1%	30,534,511	0.00143253	N/A
18	2032	0	0	7.63	6.20	7.63	2.1%	30,480,010	0.00143253	N/A
19	2033	0	0	7.63	6.20	7.63	2.1%	30,425,605	0.00143253	N/A
20	2034	0	0	7.63	6.20	7.63	2.1%	30,371,297	0.00143253	N/A
21	2035	0	0	7.63	6.20	7.63	2.1%	30,317,087	0.00143253	N/A
22	2036	0	0	7.63	6.20	7.63	2.1%	30,262,973	0.00143253	N/A
23	2037	0	0	7.63	6.20	7.63	2.1%	30,208,955	0.00143253	N/A
24	2038	0	0	7.63	6.20	7.63	2.1%	30,155,034	0.00143253	N/A
25	2039	0	0	7.63	6.20	7.63	2.1%	30,101,209	0.00143253	N/A

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770,733,365

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(1) The Non-Participant discount rate is based on the Global Insight forecast for 10-year U.S. Treasury bills.

(2) The Participant and Utility discount rates are Columbia Gas of Pennsylvania's requested return on rate base.
(3) The escalation rate is the GDP price deflator, based on the Global Insight U.S. economic outlook for February 2012.

(4) System Sales do not include transportation volumes.

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COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

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PROGRAM: WarmWise Audits & Rebates (WWA&R)

t	ENERGY SAVINGS (1) (E) YEAR MCF		AVERAGE AVOIDED ENERGY COST (2) ENERGY COST (3) (ACE) (MCE) \$ PER MCF \$ PER MCF		PARTICIPANT DEMAND SAVINGS (4) (D) MCF	UTILITY CAPACITY SAVINGS (G) MCF	AVERAGE DEMAND COSTS (ACD) \$/MCF	AVOIDED DEMAND COSTS (MCD) \$/MCF	PARTICIPANT COSTS (PC) \$	TAX CREDITS (TC) \$
1	2015	6,365	12.50	3.11	0.015151515		 N/A	93.63		
2	2016	510	12.73	3.34	0.015151515	5	N/A	93.63	0	N/A
3	2017	510	13.02	3.63	0.015151515	5	N/A	93.63	0	N/A
4	2018	510	13.14	3.75	0.015151515	5	N/A	93.63	0	N/A
5	2019	510	13.84	4.45	0.015151515	5	N/A	95.60	0	N/A
6	2020	510	13.93	4.54	0.015151515	5	N/A	97.60	0	N/A
7	2021	510	14.03	4.64	0.015151515	5	N/A	99.65	0	N/A
8	2022	510	14.12	4.74	0.015151515	5	N/A	101.75	0	N/A
9	2023	510	. 14.22	4.84	0.015151515	5	N/A	103.88	0	N/A
10	2024	510	14.33	4.94	0.015151515	5	N/A	106.06	0	N/A
11	2025	510	14.43	5.04	0.015151515	5	N/A	108.29	0	N/A
12	2026	510	14.54	5.15	0.015151515	5	N/A	110.57	0	N/A
13	2027	510	14.64	5.25	0.015151515	5	N/A	112.89	0	N/A
14	2028	510	14.75	5.37	0.015151515	5	N/A	115.26	0	N/A
15	2029	510	14.87	5.48	0.015151515	5	N/A	117.68	0	N/A
16	2030	510	14.98	5.59	0.015151515	5	N/A	120.15	0	N/A
17	2031	510	15.10	5.71	0.015151515	5	N/A	122.67	0	N/A
18	2032	510	15.22	5.83	0.015151515	5	N/A	125.25	0	N/A
19	2033	510	15.34	5.95	0.015151515	5	N/A	127.88	0	N/A
20	2034	510	15.47	6.08	0.015151515	5	N/A	130.57	0	N/A
21	2035	510	15.59	6.21	0.015151515	5	N/A	133.31	0	N/A
22	2036	510	15.72	6.34	0.015151515	5	N/A	136.11	0	N/A
23	2037	510	15.86	6.47	0.015151515	5	N/A	138.96	0	N/A
24	2038	510	15.99	6.60	0.015151515	5	N/A	141.88	0	N/A
25	2039	510	16.13	6.74	0.015151515	5	N/A	144.86	0	N/A

The energy savings (E) include annual savings realized by Choice customers and traditional sales customers.
Average energy cost is based on CPA's residential rate.
Estimates are calculated from the SENDOUT model.
Estimates are calculated from the LOADCALC model.
N/A is not applicable.

PAGE 1 OF 2

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COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS INPUTS

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PROGRAM: WarmWise Audits & Rebates (WWA&R)

PAGE	2	OF	2
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					DISCOUNT RATES					UNCOLLECTIBLE
t	YEAR	INCENTIVE COST (I) \$	UTILITY COSTS (UC) \$	PARTICIPANT (d) %	NON-PARTICIPANT (1) (d) %	UTILITY (2) (d) %	ESCALATION RATE (3) (e) %	SYSTEM SALES OR DEMAND (4) (S) MCF	SALES OR DEMAND RATIO (f) %	ACCOUNT REDUCTION (UA) \$
1	2015	0	500,000	7.63	5.70	7.63	1.4%	31,566,490	0.000777524	N/A
2	2016	0	0	7.63	6.10	7.63	1.8%	31,594,490	0.000777524	N/A
3	2017	0	0	7.63	6.20	7.63	1.9%	31,573,490	0.000777524	N/A
4	2018	0	0	7.63	6.10	7.63	2.0%	31,522,490	0.000777524	N/A
5	2019	0	0	7.63	6.20	7.63	2.1%	31,481,490	0.000777524	N/A
6	2020	0	0	7.63	6.20	7.63	2.1%	31,435,490	· 0.000777524	N/A
7	2021	0	0	7.63	6.20	7.63	2.1%	31,340,490	0.000777524	N/A
8	2022	0	0	7.63	6.20	7.63	2.1%	31,209,490	0.000777524	N/A
9	2023	0	0	7.63	6.20	7.63	2.1%	31,063,490	0.000777524	N/A
10	2024	0	0	7.63	6.20	7.63	2.1%	30,939,490	0.000777524	N/A
11	2025	0	0	7.63	6.20	7.63	2.1%	30,884,303	0.000777524	N/A
12	2026	0	0	7.63	6.20	7.63	2.1%	30,829,214	0.000777524	N/A
13	2027	0	0	7.63	6.20	7.63	2.1%	30,774,223	0.000777524	N/A
14	2028	0	0	7.63	6.20	7.63	2.1%	30,719,331	0.000777524	N/A
15	2029	0	0	7.63	6.20	7.63	2.1%	30,664,537	0.000777524	N/A
16	2030	0	0	7.63	6.20	7.63	2.1%	30,609,840	0.000777524	N/A
17	2031	0	0	7.63	6.20	7.63	2.1%	30,555,240	0.000777524	N/A
18	2032	0	0	7.63	6.20	7.63	2.1%	30,500,73 9	0.000777524	N/A
19	2033	0	0	7.63	6.20	7.63	2.1%	30,446,334	0.000777524	N/A
20	2034	0	0	7.63	6.20	7.63	2.1%	30,392,026	0.000777524	N/A
21	2035	0	0	7.63	6.20	7.63	2.1%	30,337,816	0.000777524	N/A
22	2036	0	0	7.63	6.20	7.63	2.1%	30,283,702	0.000777524	N/A
23	2037	0	0	7.63	6.20	7.63	2.1%	30,229,684	0.000777524	N/A
24	2038	0	0	7.63	6.20	7.63	2.1%	30,175,763	0.000777524	N/A
25	2039	0	0	7.63	6.20	7.63	2.1%	30,121,938	0.000777524	N/A

771,251,590

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The Non-Participant discount rate is based on the Global Insight forecast for 10-year U.S. Treasury bills.
The Participant and Utility discount rates are Columbia Gas of Pennsylvania's requested return on rate base.
The escalation rate is the GDP price deflator, based on the Global Insight U.S. economic outlook for February 2012.
System Sales do not include transportation volumes.

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PA.P.U.C. Columbia Gas of Pennsylvania, Inc. SECRETARY'S BUREAU Exhibit 8 Sheet 1 of 1

Section 59.82 Form-IRP-Gas-9 - Conservation and Load Management Program Cost Benefit Analysis Results

The results of the cost benefit analysis are presented in terms of benefit-cost ratios and net present values from four perspectives: participant, non-participant, all ratepayers and utility. It is noted that the difference between utility benefits, \mathbf{B}_{up} , under the participant test and utility benefits, \mathbf{B}_{un} , under the utility revenue requirement test is the discount rate, **d**. The discount rates should reflect the time value of money from the viewpoint being evaluated. For the participant and non-participant tests, market interest rates could be used. A utility's expected cost of capital could be used as the discount factor in determining a utility's net present value of program costs and benefits.

Provide all assumptions used in the evaluation methodology, such as energy and demand savings and costs, marginal costs, tax rates, escalation factors and rates of participation. Identify and discuss unquantified and qualitative variables, such as fuel displacement, environmental impacts, reliability benefits, customer inconvenience and benefits to the local economy.

Response:

The appropriate form is attached.

RECEIVE: 2015 HAY 29 AH 10: 48 SECRETARY'S GUREAU
Company Name: FORM-IRP-GAS-9

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COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS RESULTS

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PROGRAM: WarmWise Low Income Usage Reduction Program (WWLIURP)

PERIOD OF ANALYSIS		TOTAL TOTAL UTILITY UTILITY	TOTAL UTILITY COSTS	L REVENUE	PARTICIPANT REVENUE	TOTAL PARTICIPANT	TOTAL PARTICIPANT
BEGINNING YEAR	ENDING YEAR	(Bu) \$	(Cu) \$	(Cr) \$	(Rp) \$	(Bp) \$	(Cp) \$
2015	2039	1,343.525	4,649.232	3,294,328	9,455	3,294,328	0

	NET PRESENT VALUE			BENEFIT-COST RATIO			RATE IMPACT
PAYBACK PERIOD YRS	PARTICIPANT (NPVp) \$	NON-PART (NPVnp) \$	UTILITY (NPVu) \$	PARTICIPANT (BCRp) -	NON-PART (BCRnp) -	UTILITY (BCRu) -	(RIMnp) \$ PER MCF
25	3,294,328	(6,590,580)	(3,305,707)	Infinity	0.1691	0.2890	0.0086

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Company Name: FORM-IRP-GAS-9

COLUMBIA GAS OF PENNSYLVANIA, INC. COST-BENEFIT ANALYSIS RESULTS

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PROGRAM: WarmWise Audits & Rebates (WWA&R)

PERIOD OF ANALYSIS		TOTAL	TOTAL	REVENUE	PARTICIPANT	TOTAL	TOTAL
		UTILITY	UTILITY	REDUCTION	REVENUE	PARTICIPANT	PARTICIPANT
		BENEEITS	COSTS	COST	REQUIREMENT	BENEFITS	COSTS
BEGINNING	ENDING	(Bu)	(Cu)	(Cr)	(Rp)	(Bp)	(Cp)
YEAR	YEAR	\$	\$	\$	\$	\$	\$
2015	2039	32,211	464,554	79,105	398	79,105	0

DISCOUNTED	NET PRESENT VALUE			BENEFIT-COST RATIO			RATE IMPACT
PAYBACK PERIOD YRS	PARTICIPANT (NPVp) \$	NON-PART (NPVnp) \$	UTILITY (NPVu) \$	PARTICIPANT (BCRp)	NON-PART (BCRnp)	UTILITY (BCRu)	(RIMnp) \$ PER MCF
		(511.050)	(432 343)	Infinity	0.0592	0.0693	0.0007

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Columbia Gas of Pennsylvania, Inc. Exhibit 9 Sheet 1 of 1

Section 59.81(C) Public Information and Distribution

- A. Provide a summary of the resource planning report which is suitable for distribution to the public. The summary should be separately bound. Suggested items for inclusion in the summary are: a general description of the utility's overall approach to integrated resource planning; a brief description of the methods used in developing the load forecasts; a brief description of the utility's service territory, including a territorial map, and a general description of the utility's plans for meeting customers' needs over the three year period.
- B. The summary must include a 3-year implementation plan that specifies all activities scheduled for the acquisition and development of the resources delineated in the report, which are expected to take place during the next three years.
- C. Copies of the summary must be maintained by the utility open to public inspection during normal business hours. Copies of the summary should also be available for distribution to the general public, upon request.
- <u>Response:</u> Columbia Gas of Pennsylvania's 2015 Annual Resource Planning Summary Report is provided as a companion document.



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121 Champion Way, Ste. 100 Canonsburg, PA 15317

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