

Pennsylvania Public Utility Commission

Annual Winter Reliability Assessment

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November 1, 2013
Harrisburg, PA



Introduction

The **Energy Association of Pennsylvania** represents the interests of its

Member NGDCs:

Columbia Gas of Pennsylvania
Equitable Gas
National Fuel Gas Distribution Corp.
PECO Energy Company
Peoples Natural Gas Co.
Peoples TWP
Philadelphia Gas Works
Pike County Light & Power
UGI Central Penn Gas, Inc.
UGI Penn Natural Gas, Inc.
UGI Utilities, Inc. - Gas Division
Valley Energy



Supply and Demand

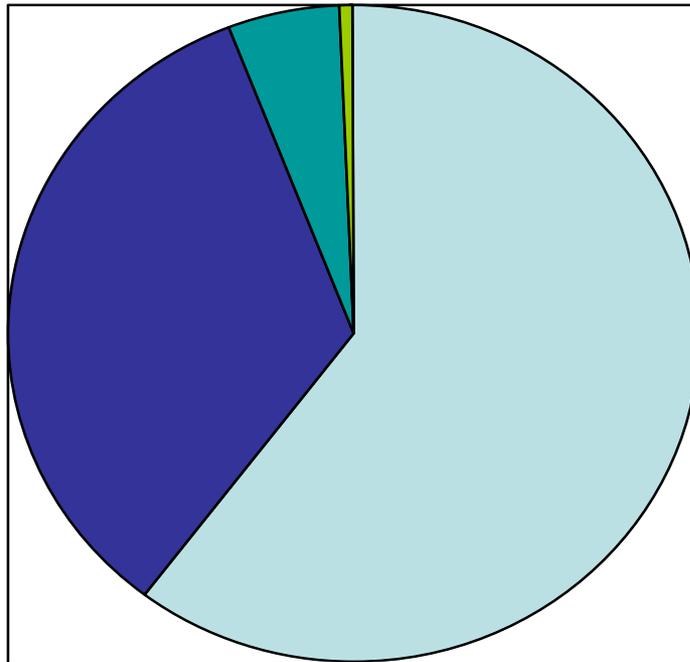
Winter 2013-2014

(all natural gas volumes in billions of cubic feet)

Expected Demand	209.8 Bcf
Expected Supply	
Flowing Interstate Gas	126.3
Storage Withdrawals	71.0
Local Production	11.2
Peak Shaving	1.3
TOTAL	209.8



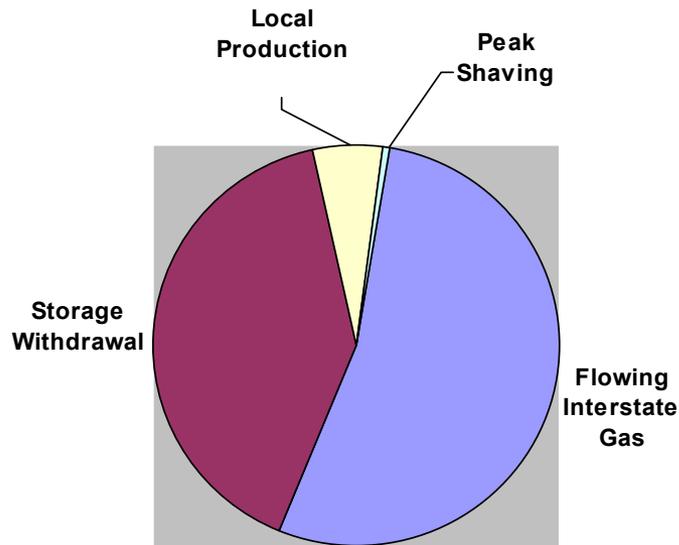
Winter 2013-2014: Supply Sources



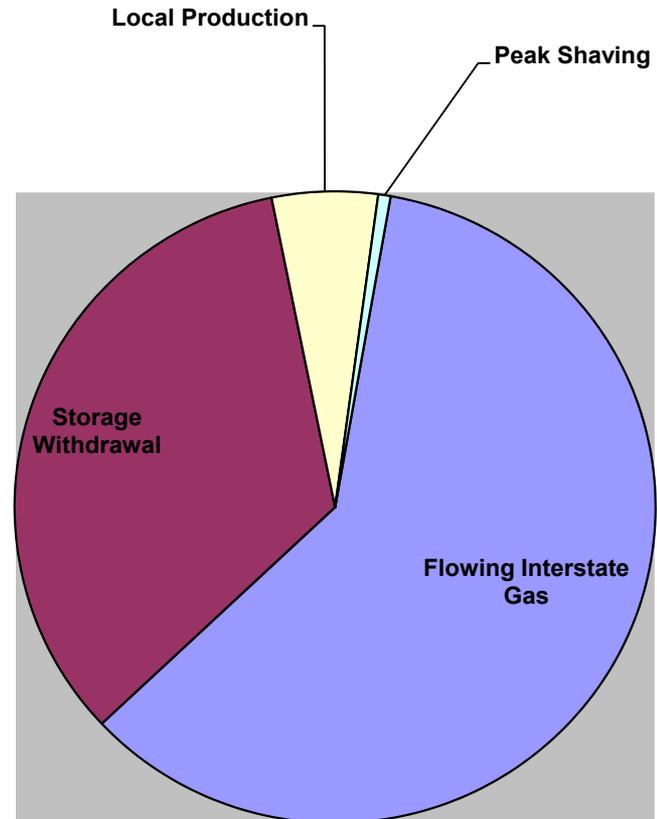
- Flowing Interstate Gas
- Storage Withdrawals
- Local Production
- Peak Shaving

Comparison of Forecasts Last Winter and This Winter

**Winter 2012-2013:
Supply Sources by Type
210.9 Bcf**



**Winter 2013-2014:
Supply Sources by Type
209.8 Bcf**



System Planning Strategies

Objective: To identify supply resources (including upstream transportation and storage capacity) that will be necessary to preserve service reliability at anticipated levels of firm demand

System Planning Strategies

Capacity and Supply Assets: NGDCs commit to capacity and supply assets as necessary to meet firm customer needs, including operational swings. Commitments may include a reserve, but do not include service to interruptible customers. These assets include:

- Pipeline deliveries per firm transportation agreements
- Underground storage withdrawals (on-system, off-system)
- Pennsylvania production (where available)
- Peak shaving facilities

System Planning Strategies

- In the past few years, the United States has experienced a rapid increase in natural gas production from shale resources. The combination of two technologies — horizontal drilling and hydraulic fracturing — made it possible to produce shale gas economically
- The Energy Information Administration (EIA) projects that natural gas production from unconventional resources in the U.S. will increase 35% between 2007 and 2030
- Increases in shale gas production in the Marcellus Region alone accounted for about 75% of natural gas production growth over the past year. The majority of Marcellus production is coming from Pennsylvania and West Virginia. According to EIA, Marcellus production is more than six times the 2009 production rate. In Pennsylvania, natural gas production rose 69% in 2012 in spite of a drop in the number of new natural gas wells started during the year
- It is anticipated that North America will become a net exporter of energy by 2020. In a recent report, EIA estimates that the United States will be the world's top producer of petroleum and natural gas hydrocarbons by the end of 2013, surpassing Russia and Saudi Arabia

(American Gas Association (AGA), Natural Gas Market Indicators, 10/14/13; US Energy Information Administration (EIA), Today in Energy, 10/21/13, 10/22/13, and 3/21/13; US EIA, Drilling Productivity Report, October 2012, Page 6, released 10/22/13; US EIA, Annual Energy Outlook 2011, Executive Summary, April 26, 2011)



System Planning Strategies - Price

- The Henry Hub in southern Louisiana is the best known spot market for natural gas. The Energy Information Administration (EIA) expects the Henry Hub natural gas spot price which averaged \$2.75 per million British thermal units (MMBtu) in 2012, to average \$3.71 per MMBtu in 2013 and \$4.00 per MMBtu in 2014
- The Henry Hub price is currently about \$3.70 per MMBtu

(US Energy Information Administration (EIA) Short-Term Energy and Winter Fuels Outlook, released October 8, 2013; US EIA, Natural Gas Weekly Update, for week ending 10/9/13, released 10/10/13)



System Planning Strategies - Pipeline Capacity Reliability

- The national pipeline network is comprised of 305,000 miles of interstate and intrastate transmission pipelines and 400 underground natural gas storage facilities. Development of this infrastructure helps meet the needs of the market
- More than one-third of the pipeline projects since 2008 addressed a growing need for additional natural gas pipeline capacity to support transportation of new natural gas production to regional markets. According to FERC, access to new production and added natural gas transportation capacity has contributed to breaking down long standing price differences between market hubs and has helped to reduce bottlenecks significantly
- EIA notes that at least 25 major pipeline projects were completed in the U.S. in 2011, adding a total of about 2,400 miles of pipeline and 13.7 billion cubic feet per day of capacity. About 27,800 miles of new natural gas transmission pipeline were placed in service in the U.S. from 1998 to 2011. After several years of this robust growth, pipeline capacity investment slowed in 2012. Over half of the U.S. pipeline projects in 2012 were concentrated in the Northeast and focused on the fast-growing Marcellus shale gas production

(US Energy Information Administration (EIA), *Today in Energy*, 3/25/13, 2/17/12; US EIA *Natural Gas Year-In-Review 2011*, released July 2012 and *Year-In-Review 2009*, released July 2010; US EIA, *Major Changes in Natural Gas Transportation Capacity 1998-2008*, J. Tobin, Office of Oil & Gas; FERC *Summer 2012 Energy Market & Reliability Assessment*, 5/17/12; www.eia.gov/pub/oil_gas/natural_gas/analysis_publications/ngpipeline/index.html)



Ability to contract for interstate pipeline capacity

- Firm capacity assets are used to transport supplies and manage storage to serve firm customers and operationally balance system requirements
- Members routinely review the interstate capacity market to try to obtain the optimum portfolio of assets to meet their needs
- The temperature sensitive loads of residential and human needs customers require dedicated, firm gas supply assets, including interstate transportation and storage services: There is no substitute
- Members do not report difficulty contracting for firm interstate capacity **when it is available**

Storage Management

- Inventories must be maintained at the levels necessary to fulfill obligations per planning criteria. Aggregate projected storage levels on Nov. 1, 2013 are sufficient to meet anticipated winter demand
- Warmer than normal weather affects storage utilization, given the need to meet minimum turnover requirements for the integrity of fields and to comply with pipeline tariff provisions

Storage Management

- Where contractually and operationally permissible, an NGDC may leave gas in storage if projected replacement costs exceed current prices, or an NGDC may use storage in lieu of firm transportation if replacement costs are favorable
- Storage inventory is managed to prevent deliverability from being reduced before potential design day occurrence, and to prevent firm markets from going unserved for some part of the remainder of the season
- Working natural gas is the volume of gas in a reservoir that is available for withdrawal. Nationally, natural gas working inventories ended September of this year at an estimated 0.04 trillion cubic feet (Tcf) above the previous five year average (2008-2012). According to the Energy Information Administration (EIA), and based on projects already under construction, another 71 billion cubic feet (Bcf) of planned design storage capacity may be added to the grid in the Lower 48 states in 2013
- For the week ending October 4, 2013, working natural gas in underground storage totaled 3,577 billion cubic feet (Bcf) which is 1.6% above the five year average, and closing rapidly on last year's total

(American Gas Association (AGA) Natural Gas Market Indicators –10/14/13; US Energy Information Administration (EIA), Short-Term Energy and Winter Fuels Outlook, released October 8, 2013 ; US EIA, Today in Energy, 7/24/13)



Injections into LNG Facilities

- Two Association members inject into member-owned facilities
- Total volume injected: 4.7 Bcf
- PECO Energy anticipates using LNG to meet 1% of winter day requirements, PGW anticipates using LNG to meet 3% of winter requirements
- Management of LNG facilities is primarily a matter of preparedness

Gas Price Volatility: Hedging

- Based on a weighted average of the members, 39.4% of this winter's supplies are hedged
- Supplies are considered hedged if they are
 - Already purchased and in storage
 - If they are contracted for delivery under:
 - Fixed-price contracts
 - Forward-priced contracts
 - Price caps

Conclusion: Supply

- Members are well prepared to accommodate the conditions forecasted in their winter season planning design.
- Underground storage and peak shaving inventories will be adequate to handle design conditions.

Thank you.